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They've Beaten the Kaiser— Now Treat Them Right

NEXT week we shall have a chance, probably our last chance, to dig down into our pockets for a liberal contribution to the work of the several welfare organizations banded together, forgetful of creed, in the United War Work Campaign. They are trying in our behalf to carry a bit of home atmosphere to the front. The Liberty Loan was a glorious success, but after all in subscribing to it we only took advantage of a gilt-edged investment. Now we are called upon to make a gift; a small gift as compared with the loan; in fact only 2½ per cent of the loan subscriptions. A liberal response to this appeal will greatly delight the boys on the other side, coming as it will on the crest of the wave of victory.

The electric railways believe in welfare work, and many have departments devoted to it. The welfare idea is accepted as the proper, reasonable and just thing wherever there is a large group of men. It is an outgrowth of the conviction that an employer's duty is not discharged when he has paid for the employee's labor or skill. If welfare work is good in peaceful occupations at home it is a thousand times more important under conditions at the front. General Pershing has said that every hut adds ten men to a quota of one hundred; an ample justification for generous support. If we try to picture what the front would be without the hut we need no further stimulus to spontaneity in giving.

Tell Your Gains as Well as Losses

UNDER the stress of war conditions electric railways are accelerating the adoption of certain economies, like the skip stop, the car-checking instrument and the one-man automatic car, that they looked at askance in the more prosperous and more prodigal days of peace. Now because one or more of these economies happen to be adopted coincident with an application for a higher fare, there may be an unwillingness on the part of some to admit that savings result. They are ready to publish the fact that even Gorgonzola cheese has gone up in price with copper, milk and chewing gum; but if they adopt an economy they are afraid that the effect of the saving effected will become exaggerated in the minds of the public and in some way will be a handicap toward an effort for increased fares.

We believe, in all soberness, that such one-sided publicity is unwise. A host of civic patriots are studying the cost of electric railway operation. These men know that if the skip stop releases coal to other industries, it must also save some dollars for the railway and that

one man on a car manifestly costs less than two. They look for some acknowledgement of these self-evident facts in the railway's publicity campaign on "Why We Need a Higher Fare." They do not find any. Unfamiliar with the details of these savings, they tend to do just what the over-conservative company wanted to avoid, namely, place greater value on the saving than the facts justify. Then in sheer self-defense the railway will have to disclose all its costs and saving from A to Z. But by that time the damage has often been done. There is no policy in publicity which pays so well as telling all the facts. "The truth shall make ye free!"

Straight Talk to Authorities and Malcontents in New Orleans

THE city of New Orleans has found itself on two occasions recently in the spotlight of unenviable publicity due to disputes over a proposed increase in rates of fare. The first incident was caused by the delay of the city authorities in passing an ordinance for increased fares, as agreed when the War Finance Corporation loaned \$1,000,000 to the local utility company. This delay resulted in the sending of a letter of rebuke from the managing director of the War Finance Corporation to the Mayor of New Orleans. It brought prompt action by the City Council in granting an increase in rates for gas and electricity.

Incident No. 2 was the seeking of a writ of injunction by attorneys for organized labor to restrain the company from putting the fare increases into effect and charging fares in excess of 5 cents. The National War Labor Board had previously granted substantial increases in wages to the employees of the company and recommended that the city authorities allow an adequate increase in rates of fare. When Messrs. Taft and Walsh of the War Labor Board learned of the contemplated action of the labor representatives they sent a letter to the acting president of the American Federation of Labor calling his attention to the New Orleans situation and warning the New Orleans objectors that if they persisted in their efforts to balk financial relief for the company the board would be compelled to suspend the award which gave the employees increased wages.

We trust that the organized labor element in New Orleans has seen the light before now, just as the city authorities did when they were warned that their dilatoriness was an exhibition of bad faith and would injure the credit and standing of the municipality. In many cities the Amalgamated representatives have joined with the local companies in seeking higher fares. They recognized that their bread and butter depended on such relief for their employers. Other organized

labor, of course, has not the same interest in getting fares raised. It must be assumed, however, that all labor recognizes the great lift given to electric railway workmen by the War Labor Board. This board must not be antagonized when it is seeking to enable the employers to meet the new wage burdens, and the officials of the American Federation of Labor should be quick to see this point. Over and above any selfish interest in cases of this kind organized labor should not stand in the way of a square deal. The people of New Orleans should take a hand in this local affair in the interest of fair play. The honor of the city is involved.

What We Can Learn from the Brooklyn Catastrophe

THE first thought that most people will have in regard to the terrible Brooklyn accident on Nov. 1 is that such things should not be and that those to blame should be held strictly accountable. We shall not attempt to anticipate the conclusions of the inquiry now being conducted except to say that the first essential of service is safety, and anyone who knowingly authorized the employment as the motorman of a fast train of a man who was unfamiliar with the physical features of the line in question so as to make operation unsafe deserves punishment.

Apart from its own unfortunate features, such an accident as that in Brooklyn is greatly to be regretted because it sets back the safety movement in a measurable degree. The tendency, we fear, will be to say "What's the use?" Nevertheless, this is a time when more than the usual exertions should be put into assuring safety of operation. During a period of scarcity of labor a poorer class of men tends to come into the service, and even the efficiency of the older men becomes reduced. They realize that there are many opportunities for work elsewhere, and in consequence they fear discharge less and become lax in carrying out the rules. Then suddenly comes a great tragedy, with its demoralizing results on company and men. If discipline seems to have less hold on the men, an attempt should be made to arouse in their minds the humanitarian instinct. This may hold them even if rules do not. Here may lie, perhaps, the lesson which the industry should draw from this catastrophe.

The Most Perfect Equipment Will Not Operate Alone

IN RECENT issues of this paper have appeared numerous articles on new power plant and substations and their component parts, and on new equipment for the track, shop and other departments. In spite of war conditions, indeed, in some cases on account of them, apparatus is being installed to reduce labor, save fuel and increase over-all economy.

These stories of fine modern equipment and the magnificent way in which it operates form one side of a picture of which the other is not so rosy. The most modern equipment requires human labor and human intelligence to force it to deliver its output, whatever that may be, cheaply and reliably. In ordinary times it is possible to develop the staff with the equipment; now, when the need is greatest, hands and brains are

scarcest. It seems to be practically impossible to maintain peace-time discipline and effectiveness. What more can be done? First the management and the technical departments should co-operate fully to be sure that the best available equipment and methods are in use. High-grade men must be retained or secured as heads of these departments. Salaries and wages must be commensurate with the brains and brawn which are necessary. The men must be made to feel that in doing their work well they are contributing to the success of our representatives at the front. It would seem that some kind of an organization of the men to impress upon them the importance of their work might help. Transportation is essential to national welfare—equipment is essential to transportation—a competent technical staff, plus good equipment, is essential to economical, reliable operation.

Freedom of Choice Must Not Lead to Abuses

A CLEAR-CUT ruling upon the complementary duties of capital and unionism in regard to union membership has been made by the National War Labor Board in the Columbus and Brooklyn cases, as noted last week. It is especially emphatic because the board states that the purpose of so elaborating its principles is to remove all misconceptions on the subject.

The finding of this federal agency is to the effect that electric railway employees should be allowed to exercise absolute freedom of choice in regard to union membership. In cases where the men prefer to join outside unions, however, and no contract recognizing the union now exists, the board holds that the company is justified in refusing to deal with any parties except a committee or a representative selected by the employees from their own number. These principles are not new, radical or unjust. They are simply the expression of a meritorious intent to treat both companies and employees upon a country-wide basis of long-recognized fundamental right.

Because the experience of many electric railway managers with unions has been unfortunate, however, and because every effort should be made to insure safe and continuous service for the public at all times, we strongly urge five additional principles. First, internal brotherhoods or local associations, some of which have accomplished such excellent results in the way of employees' welfare, local harmony and uninterrupted service, should be encouraged and should have such advantages and freedom as to keep employees out of foreign unions upon the simple basis of fair competition. Second, no matter what choice the employees make as between local and foreign organizations, in all questions of discipline as regards the efficiency and safety of the service the final determination should lie with the company, because efficiency is necessary to economical operation and the company is held by the public financially responsible and its officers often criminally responsible for safety in operation. There should be, however, some impartial court to which the employee can appeal when he believes his discharge due to union affiliations. Third, the danger of strikes should be minimized by the working out of some positive plan, such as the filing of a bond or the establishment of some other

financial guarantee sufficient to reimburse the company for all monetary damage which it may suffer through breaches of contracts by the union. Fourth, in the interests of employees, public and company all sympathetic strikes should be prohibited by the constitution of the union. Finally, the avowed purpose of any employees' organization should be one of friendship and co-operation with the company and not of hostility.

Labor wants the right of untrammelled choice in regard to unionism; that is just. The public wants safe and continuous service; its right is paramount. After exercising their freedom of will in regard to union membership, therefore, unionists are in no way justified in performing acts that endanger public convenience and safety, and the public should support electric railways in seeking to prevent union abuses.

Chicago Decides Against New Franchise

THE defeat of the traction ordinance in Chicago on Tuesday must be regarded as a victory for the politicians. Returns from various districts indicate that the most intelligent elements of the population were in favor of the measure and appreciated what it meant for the city. On the other side, however, was a combination of politicians of both parties who, with the use of the ward organizations, succeeded in keeping the question alive for the next mayoralty campaign.

Candidates for mayor in Chicago have never been without a traction plank in their platforms, and for this reason politics refused to stay "adjourned" even when so important a question for the good of the community had a chance of fair settlement. The strongest card played by the politicians was the cry that the new ordinance meant increased fares. They carefully ignored the real truth that fares can be and probably will be raised by the State Commission before the proposed measure could become effective. Economies of unified operation and elimination of profits under the new ordinance would undoubtedly have assured the lowest possible fares at all times, but the politicians succeeded in clouding this issue.

The people of Chicago have had their choice. The franchise which was submitted to them was as fair a settlement as could be arranged through compromise. It was not a company proposition, and the utility interests may go along with their present franchises, taking chances with the State Commission for fair treatment while the people put up with limited transportation facilities. They were offered a modern system of combined rapid transit and surface lines calling for the expenditure of \$300,000,000 in exchange for a reasonable rate of return. The chances are that before long they will be paying a higher fare and still putting up with inadequate service.

Getting Along With Fewer Condenser Tubes

THE Electric Railway War Board urges electric railways to conserve condenser tubes, following notification from the War Industries Board that the requirements of the navy and emergency fleet for non-ferrous condenser tubes are so large that few if any will be available for repair of land surface condensers. While this shortage of condenser tubes will inevitably result in deteriorating vacuum, there are probably several modifications of usual operating practice which will tend to minimize the evil effect.

In many of those power stations where it has been the custom to run the auxiliaries of the stand-by turbine in readiness for more nearly instant starting, in the event of its needing suddenly to be brought up to speed and given its share of the station load, decision should be courageously made to abandon the practice forthwith. It is true that the water kept circulating through an idle condenser remains cold during its passage through the tubes and the aggravation of corrosive action occasioned by the normal rise of temperature is avoided. This is but of minor importance, however, compared with the total corrosion, and decisive reduction of total station tube losses will result from keeping the auxiliaries idle when they are not actually needed.

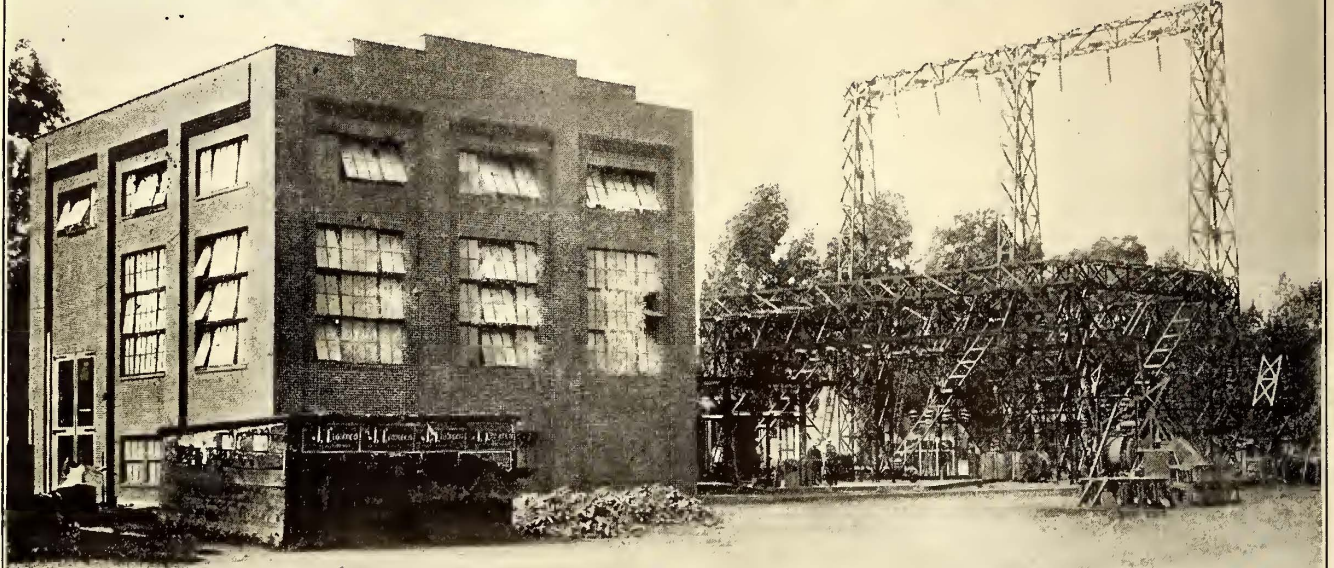
When tubes do fail they should be promptly removed *in toto*, not merely plugged at the tube sheet and allowed to remain in the condenser. Their removal will open up the steam spaces through the condenser and help, during the coming winter, in forcing the lower pass to bear its share of heat absorption.

Still another expedient is the raising of circulating pump speed somewhat above the normal by governor adjustment of the prime mover, if the pump is steam driven, or by special resistance inserted in the fields if it is motor driven. The vacuum maintained by a condenser depends not very much upon the number of tubes in service but very greatly upon the quantity of water circulated. Such speeding above the normal will create the increased head needed to cause the total quantity of water circulated to approximate the normal while the number of tubes through which it circulates becomes continually less due to the scarcity of tubes for replacement. This overspeeding need represent little if any increased power because, while the developed head will be increased, the quantity of water circulated cannot be fully, but only approximately, maintained at the normal figure. The velocity of flow through the reduced number of tubes in service will be increased, and while in a sense this may augment their rate of corrosion yet also there may be a compensating effect in that particles of coal dust which in some cases lodge in tubes with normal water circulation, and greatly stimulate corrosion, may be more effectively swept through by the increased velocity.

Symposium on Municipal Ownership

Following the presentation of Mr. Mortimer's resolution at the New York Conference last week the ELECTRIC RAILWAY JOURNAL telegraphed to a number of railway managers asking for an expression of opinion regarding it. Replies received up to the time of going to press are printed on page 837 of this issue.

Building a Railway to Hog Island



The Technical Details of the Philadelphia Rapid Transit Company's Shipyard Line Are Here Described — A 66,000-Volt Outdoor Substation and a 4500-Kw. Converter Substation Constitute the Important Features of the Electrical Equipment

IT HAS BEEN noted in several articles published in recent issues of the ELECTRIC RAILWAY JOURNAL, that transportation of the workers at the Hog Island shipyard has necessitated some little increase in the facilities and equipment of the Philadelphia Rapid Transit Company. While the new construction has not involved any problem difficult from the standpoint of technical theory, the number of different parties involved, the scarcity of labor, the difficulty of securing prompt delivery of new materials, the necessity of using available or second-hand material to the limit of its capacity, the speed with which it was

of the shipyard vicinity. This new street is an extension of the avenue known as Island Road from Eastwick Avenue south for 9000 ft. to where the new street enters the plant of the government-controlled American International Shipbuilding Corporation. From this point the line runs through the shipyard property for about a mile, and consists of a loop with terminal facilities at the principal yard entrances. This loop, a plan of which was shown in the ELECTRIC RAILWAY JOURNAL for Sept. 14 page 449, runs parallel to the bank of the Delaware River and divides the shipyard property into two parts, that between the river and the

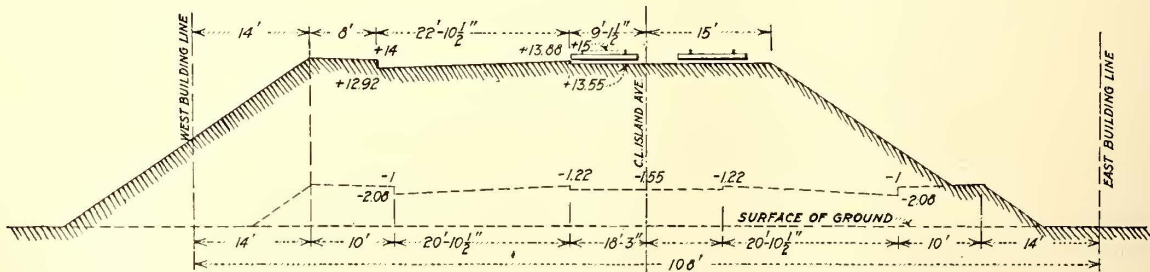


FIG. 1—TYPICAL CROSS-SECTIONS OF THE NEW TRACK EXTENSION

necessary to carry on the construction, and the ultimate end to be accomplished by the completed project, make the technical details of more than ordinary interest.

As the existing lines of the Philadelphia Rapid Transit Company were some distance from the shipyard property, it was necessary to construct some new line in order to provide direct service for the shipyard employees. The route for the new line is along a new street which the city of Philadelphia is opening across the marshy meadowland which constitutes the terrain

loop containing the yards and that between the loop and the property line containing the steam railway terminal and housing facilities, such as a limited number of barracks and a hotel.

The new street is 108 ft. in width, the double-track car line occupying the center. The filling necessary to bring the marsh up to subgrade was done by the city of Philadelphia. A cross-section of this subgrade is shown by the dotted line in Fig. 1. The full lines in the figure represent the cross-section of a fill which

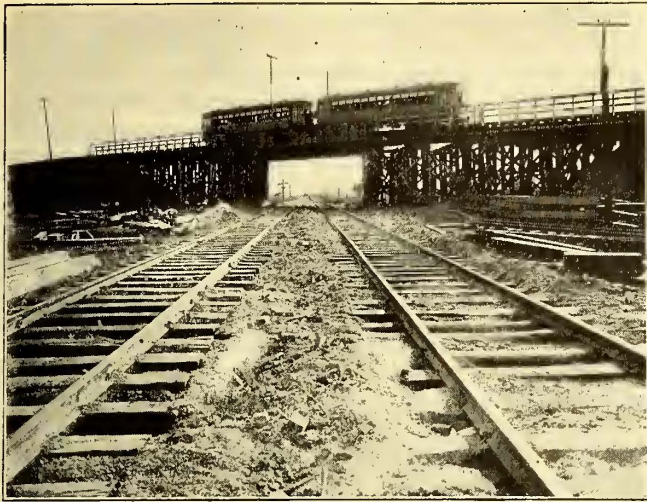


FIG. 2—THE VIADUCT OVER THE STEAM RAILWAY AND ONE OF THE NEW TWO-CAR TRAINS

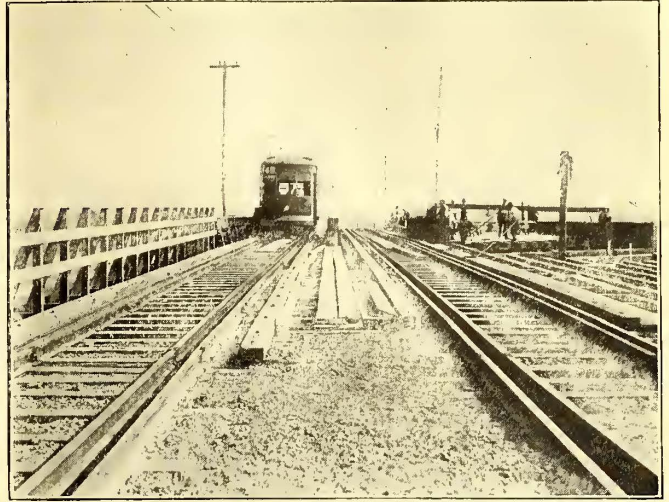


FIG. 3—VIEW OF THE VIADUCT DECK—CONSTRUCTING THE DRIVEWAY

was made as an approach to a viaduct over the tracks of a branch of the Pennsylvania Railroad. It will be noted that only one roadway for vehicles is provided and the tracks are located on one side of this fill. Approximately 70,000 cu.yd. of cinders were used in bringing the subgrade up to the normal level and 30,000 cu.yd. of material was necessary for making the approaches to the viaduct just mentioned. The material for these was secured by stripping off the tops from some knolls located on the city property, through which a part of the line runs. This stripping was done by means of a steam shovel, and the material was hauled from one-fourth to one-half a mile to the site of the new street over a construction railroad upon which standard-gage dump cars and steam locomotives were operated. Except for the approaches to the viaduct, which are on a 4-per cent grade, the track is practically dead level. The roadway surface is about 1 ft. above high water.

The tracks are laid with 90-lb., A.S.C.E. standard T-rail to a gage of 5 ft. 2½ in. The center-to-center distance is 10 ft. 2¼ in. The ties are of chestnut, 6 in. x 8 in. x 8 ft., spaced to approximately 2-ft. centers. About 6 in. of cinder ballast is tamped between the ties and the subgrade. The rails are joined with 4-hole continuous rail joints which are supported, a tie plate being placed under the other rail to level up the tie. On curves both rails are guarded and the running rails are braced at frequent intervals. For a short

line running over a bit of marshy land the new extension makes an unusual number of crossings with other railway tracks. Two of these, over the Philadelphia & Reading Railroad and one branch of the Pennsylvania Railroad, are made at grade, as is also an intersection with the single-track line of the Philadelphia Railways. As noted before, a viaduct, shown in Fig. 2, is used in crossing another branch of the Pennsylvania Railroad. Both of these branches

are new lines still under construction and are part of the war work going on in this vicinity.

The viaduct, which is being built by the railroad company, makes an angle of about 60 deg. with the railroad tracks necessitating the use of a skew bridge. The present span is about 75 ft. in length and covers three tracks. A second-hand three-girder half-through bridge, taken from some other portion of the railroad system, supports the trolley tracks, while the highway is carried on I-beams. The bridge work is supported on double wooden bents.

Owing to the vast amount of war work going on in the immediate vicinity, the railroad company expects this branch to become an important line in the near future and, to provide for further tracks, a few bents of wooden trestle have been constructed at each end of the present span. The trestle bents as well as those supporting the girder itself, rest on concrete foundations which have been run down into the ground a few feet to an underlying bed of gravel. The viaduct is built with a clearance of 18 ft. between the railroad track and the bottom of the girders. A view taken from the deck of the viaduct and looking toward the shipyard is shown in Fig. 3.

The numerous derricks of the shipyard appear faintly in the background. The track construction on that portion of the extension between Eastwick Avenue and the shipyard was done by the Philadelphia Rapid Transit Company by a force-account contract with a local firm. That portion within the shipyard was done by the construction forces of the American International Shipbuilding Corporation according to plans and specifications furnished by the electric railway company. For this portion of the track, the construction details differ only in that 85-lb. A.S.C.E. rail was used.

The track bonding, which on the Philadelphia Rapid Transit Company system comes under the jurisdiction of the way department, consists of No. 0000 "Erico"

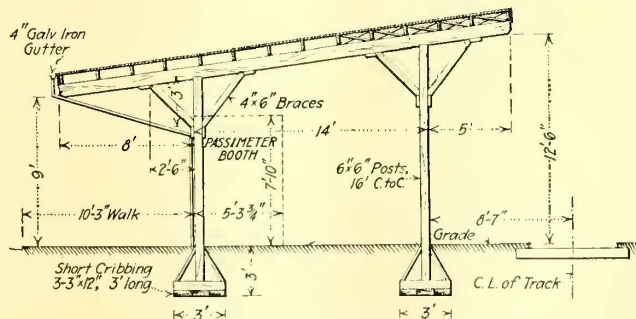


FIG. 4—STRUCTURAL DETAILS OF THE SHELTER SHEDS

bonds. These bonds have been given a dark coat of paint to render them less conspicuous to collectors of junk copper.

In Fig. 4 is shown a cross-sectional view of the type of shelter shed erected at the Hog Island terminal. These sheds do not cover the entire loading platform, but afford shelter to the passimeter booths and adjacent portions of the loading platforms. As shown by the

would naturally be considerable congestion at this intersection even if it were not an important transfer point and the carhouses were located elsewhere. Adding to this congestion, a number of tripper runs are operated between this carhouse and Hog Island, on the Hog Island route, and between the carhouse and various points on the Chester Short Line. To relieve the congestion, several changes have been made at the carhouse. A non-operated track already existed on the Fiftieth Street and Greenway Avenue sides of the carhouse. Six of the carhouse tracks, however, were stub-ended at the Greenway Avenue end of the carhouse. To facilitate handling the tripper cars a second track was laid on Fiftieth Street and Greenway Avenue, and the opening in the Greenway Avenue end of the carhouse was enlarged to permit of two three-track ladders being connected between the Greenway Avenue track and the stub-ended carhouse tracks. These changes permit the tripper cars to be turned off the main line at Fiftieth Street and carried around the carhouse to Greenway Avenue and Forty-ninth Street. This point was made a transfer point for those tripper passengers who desired to take cross-town lines.

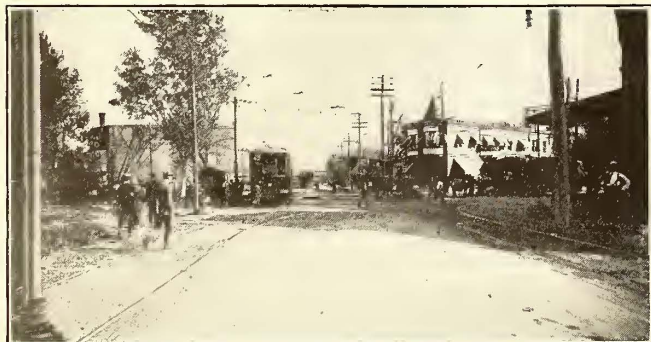


FIG. 5—EASTWICK AVENUE AND ISLAND ROAD—SUBSTATION STRUCTURE IN THE RIGHT BACKGROUND

drawing the construction is of a more or less temporary character. They were constructed by the shipbuilding company. To provide for an office and for comfort rooms for the railway employees two small buildings, one 16 ft. x 24 ft. and the other 16 ft. x 40 ft., have been erected at the terminal. One of these is located at the extreme end of the loop, and the other is near the entrance to the shipyard.

Viewed from a traffic standpoint, the lines of the Philadelphia Rapid Transit Company, in the vicinity of Hog Island, may be likened to a fan. The Chester Short Line route, traversing Island Road and Woodland Avenue, and the Hog Island route traversing Island

CONSTRUCTION WORK WAS DONE IN RECORD TIME

Possibly the greatest difficulty encountered in the way of construction incident to the extension was in connection with the special work required at the carhouse and the rather numerous grade intersections with other railway lines. These difficulties were due not to the complicated nature of the special work but to the short time in which the material was required to be delivered. While considerable of the subgrade fill had been made by the city, actual track construction work was not started by the railway until July 2. A week or so after this the time allowed for the construction program was shortened by nearly a month in order to have the opening of the new service coincide with the launching of the first ship. As the extension was officially opened on Aug. 3, the work of construction, considering the conditions, was done in record time.

Because of the heavy traffic conditions the additions necessary to the power system are out of all proportion

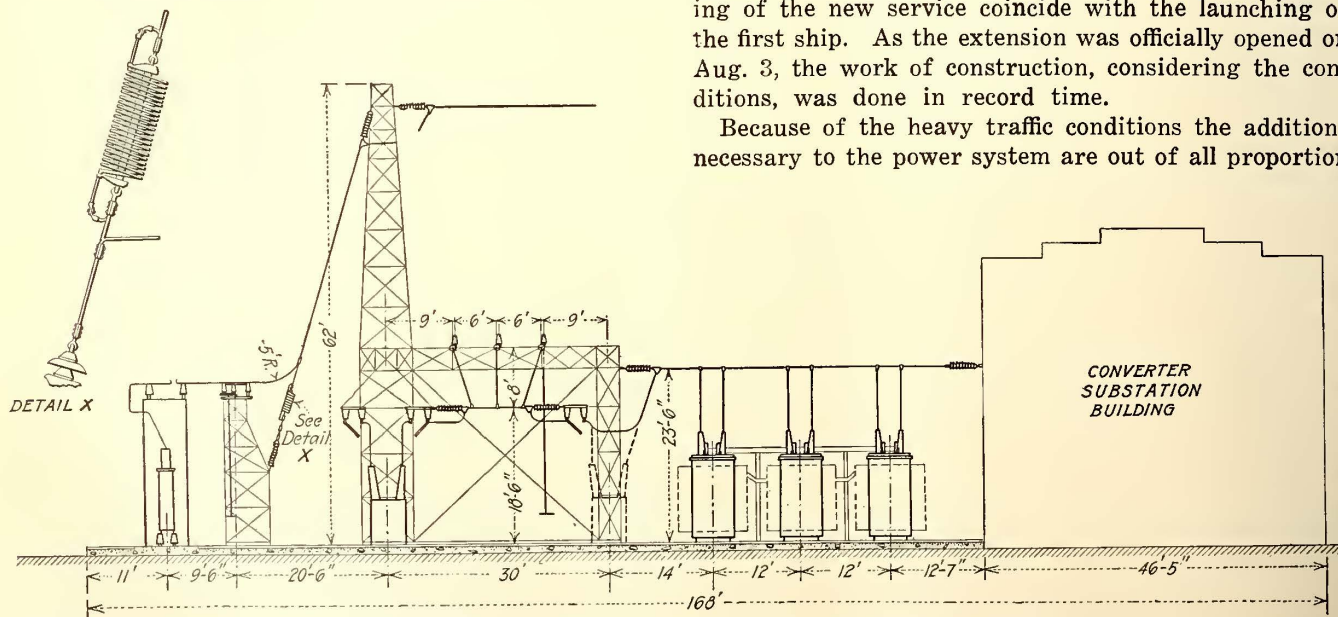


FIG. 6—GENERAL LAYOUT OF THE HIGH-VOLTAGE EQUIPMENT

Road and Elmwood Avenue, constitute the handle of the fan, while the carhouse at Forty-ninth Street and Woodland Avenue is located at the point at which the ribs of the fan start to diverge.

As a consequence of this fan-like arrangement there

to those required in the way department. Possibly the most important of these reinforcements is the new substation located at Eastwick Avenue and Island Road, approximately 3 miles from the end of the shipyard terminal. It supplies power not only to the cars of the

Philadelphia Rapid Transit Company but also to those of the Philadelphia Railways, while the latter are operating on the terminal tracks. In addition to furnishing power to the new extension it feeds the trolley on Island Road as far as Elmwood Avenue and on Eastwick Avenue for two sections or 3 miles. As the traffic on all of these lines is very heavy during the rush-hour period, it will be seen that the power demand on the substation is far higher than usually falls to the lot of a surface car substation in a suburban district.

TRANSFORMER OIL PIPING AND DRYING SYSTEM WELL WORKED OUT

To supply these demands the new substation is equipped with one 2000-kw., one 1500-kw. and one 1000-kw. synchronous converters. These are six-phase, 60-cycle machines, the direct-current voltage being 600. The energy for their operation is purchased from the Philadelphia Electric Company whose 66,000-volt, two-circuit, Philadelphia-Chester line runs about 400 ft. from the outdoor substation which has been installed to transform the line voltage to the railway company's standard primary distribution voltage, 13,200. The transformer equipment consists of three 2000-kva., 60-cycle, 69 000/13,200-volt, oil-insulated, radiator-type transformers built by the Westinghouse Electric &

the oil from one transformer and is located in a pit near the transformer bank. This pit has been so designed as to permit the ready removal of the tank. Connections have been provided so that a filter pump and press can be used either indoors or outdoors in pumping oil from the tank to a transformer or for

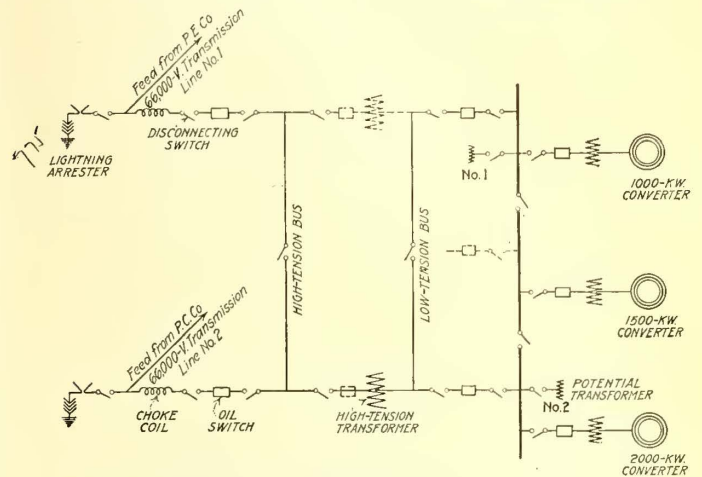


FIG. 8—SIMPLIFIED MAIN-CIRCUIT CONNECTION DIAGRAM

circulating the oil from a transformer through the filter press back into the transformer again.

In conformity with the company's standard construction all power lines both in and out of the substations are carried underground. Thus the low-tension buses of the outdoor substation are connected to the primary buses of the converter substation by short lengths of 13,200-volt, three-phase, underground cable. These cables are of No. 0000, B & S., stranded copper, and are paper-insulated and lead-covered. A simplified connection diagram is given in Fig. 8, in which proposed future additions are shown in dash lines.

Within the converter substation, air-cooled transformers are used to step the 13,200-volt energy down to a voltage suitable for the converter. For this purpose

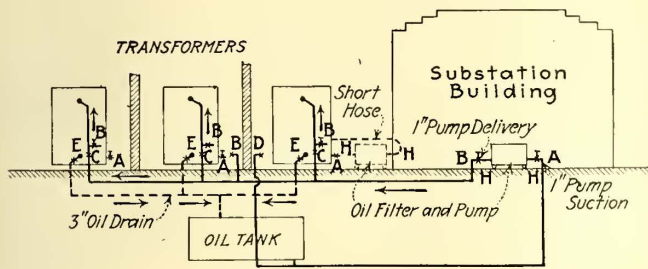


FIG. 7—OIL-PIPING DIAGRAM ILLUSTRATING CONNECTIONS TO FILTER AND PUMP

Manufacturing Company. In the foundation and overhead structure plans, provision has been made for the future addition of another similar group of transformers. To insure continuity of service both circuits of the high-tension line are connected into the substation.

The high-tension line construction involved a special tapping tower in the line of the Philadelphia Electric Company and a turning tower upon which the high-tension tap-leads make a right-angle turn to reach the anchorages on the outdoor substation platform. In the design of these leads special precautions were taken to eliminate all sharp turns between the line and the lightning arresters. Electrolytic arresters are used, these being connected to the high-tension leads through Burke horn-gap disconnect switches. Similar switches are used to sectionalize the 66,000-volt bus, which is suspended from eight-disk Ohio Brass, suspension-type insulators. The low-tension buses are also sectionalized, thus permitting the greatest flexibility of connections in the outdoor substation. The 66,000-volt bus is of No. 00, B. & S. stranded copper wire. An elevation of the substation and connections is displayed in Fig. 6.

A particularly well-planned oil system, the piping diagram of which is shown in Fig. 7, has been installed in this substation. The tank is large enough to hold

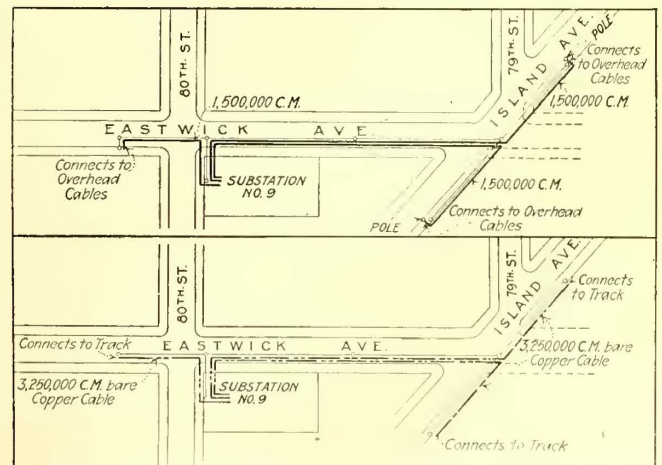


FIG. 9 (At top)—UNDERGROUND CONNECTIONS OF POSITIVE FEEDERS. FIG. 10 (At bottom)—NEGATIVE FEEDER CONNECTIONS

three 667-kva. transformers are connected to the 2000-kw. converter, three 500-kva. transformers to the 1500-kw. converter, and three 335-kva. transformers to the 1000-kw. converter. The direct-current connections, both positive and negative, to the outside lines, are shown in

Figs. 9 and 10. Of the converters the 2000-kw. machine is a new one purchased from the Westinghouse Electric & Manufacturing Company, and the others are second-hand machines brought from other substations where recently increased power demands have required the installation of larger machines.

The increased traffic has also necessitated some additions to the company's Fifty-Eight Street and Woodland Avenue substation, a 1500-kw. converter recently removed from another substation having been installed here. To gain increased primary power capacity at this substation a No. 0000, 13,200-volt paper-insulated, lead-covered underground cable has been run from the Thirty-Third and Market Street power house of the company to the substation.

STRUCTURAL DETAILS OF THE NEW SUBSTATION

A general idea of the structural details of the new substation can be gained from the accompanying illus-

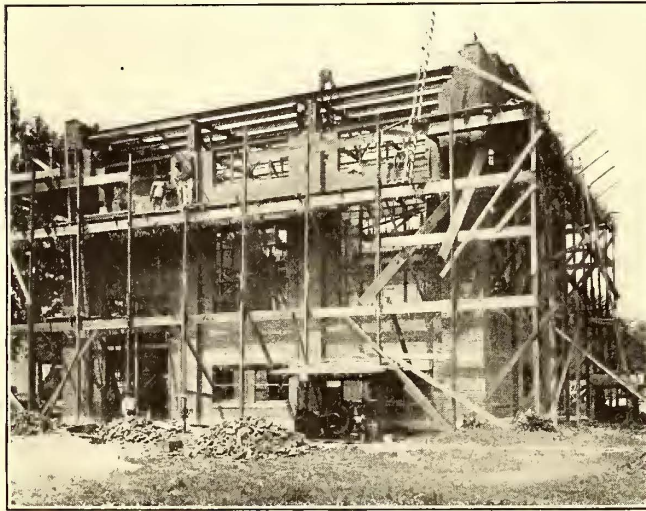


FIG. 11—SUBSTATION UNDER CONSTRUCTION, SHOWING TRUCK ENTRANCE AND CRANE SUPPORT

trations. The photograph from which Fig. 11 was reproduced was taken from Eightieth Street. The opening in the lower left-hand corner is of sufficient size to permit a truck loaded with the larger portions of a converter or transformer to be backed into place within reach of the overhead crane. One of the supports of the crane track can be seen through the window openings. In Fig. 12 is shown the conduit for the low-voltage circuits just preparatory to pouring the concrete for the main floor. The crane girder with the details of its support are also well shown in this illustration. Another view of the substation structure in process of construction showing the foundation for the outdoor substation, and one of the roof trusses of the converter substation is illustrated in Fig. 13.

THE FEEDER SYSTEM REQUIRED REINFORCEMENT

Along with the reinforcement in substation capacity and primary power copper considerable additions to the existing feeder copper have been necessitated by the new load. With the Chester Short Line traffic thrown over onto Woodland Avenue, an increase in the feeder copper there was essential. This was secured by transforming a tie line which connected the Fifty-Eighth Street and Woodland Avenue substation with the

Thirty-third Street and Market Street power house into a feeder. The increased traffic on Chester Avenue, caused by routing the Hog Island cars over this line, required an increase of feeder capacity along Chester Avenue for a distance of 7100 ft. This increase was secured by replacing a 400,000-circ. mil cable with a 1,500,000 circ. mil cable.

In the rearrangement of the distribution system on Eastwick Avenue two sections of trolley wire are being fed from the new substation. The feeder capacity on this line has been increased from 1,000,000 circ. mil to 2,000,000 circ. mil by the addition of two 500,000-circ. mil cables. These cables are all overhead, except as shown in Fig. 9 illustrating the underground connections to the substation. On the new line to Hog Island the feeder system consists of three 500,000-circ. mil cables for the first mile, two 500,000-circ. mil cables for the second mile, and from there to the end of the loop one 500,000-circ. mil cable.

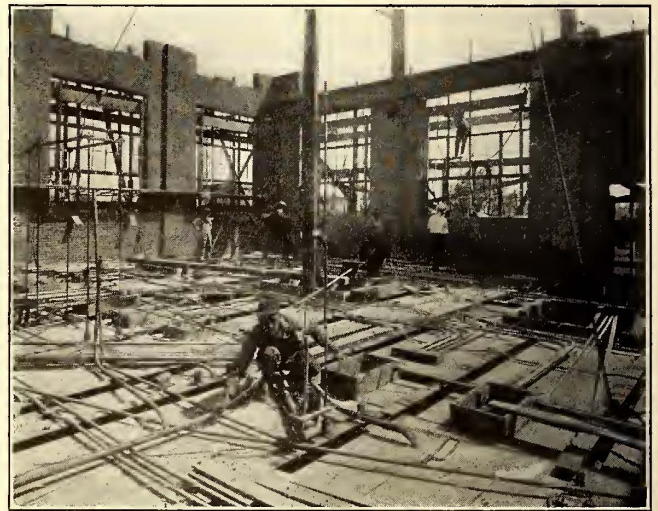


FIG. 12—CONDUITS FOR THE SUBSTATION LOW-VOLTAGE CIRCUITS

Section insulators insulate this overhead work from that of the Philadelphia Railways, where the line of the latter company enters the terminal loop on Hog Island. The feeders are connected in parallel and are tied into the trolley every 700 ft. The tie-in is made by replacing the usual span-wire cable with a copper one and insulating this from the pole with wood strain insulators. Electrical connection to the trolley is made by means of feed yokes which take the place of the usual ear insulators. The feed-in cables are No. 0000 triple-braid, weatherproof standard copper and are connected to the feeder through a feeder switch. This is a quick-break switch mounted at the top of the pole and inclosed in a cast-iron box of the company's own design. The box is arranged for clamping on either iron or wood poles. On the side of the pole opposite from the switch box, a Garton-Daniels direct-current lightning arrester is placed. The switches are kept in repair by a maintenance crew, which gives them a periodic inspection, making such slight repairs as need be made in connection with each inspection.

The contact line on the new extension is of No. 0000 round copper. Span wire construction is used. The usual cap-and-cone insulator separates the span wires from the trolley, attachments to the trolley being made

with 15-in. clinch ears constructed after the company's own design. The span wires are $\frac{5}{16}$ -in. galvanized steel strand, so placed as to give a trolley clearance of about 18 ft. Fir crossarms carrying four pins are mounted on the feeder line poles.

Approximately 2000 ft. of the line is built on tubular steel poles with sections $5\frac{1}{2}$ in., $6\frac{1}{2}$ in., and $7\frac{1}{2}$ in. in diameter. These are mostly old poles, which, while in good shape, have in some cases seen nearly twenty years of service. On these poles six-pin iron arms are used and a screw-cap composition cable insulator is used to insulate the cables from the pin. On the wooden arms porcelain insulators perform this service.

The poles are set about 6 ft. deep with a concrete setting for the iron and earth fill for the wood. "Never-creep" guy anchors with $\frac{5}{16}$ -in. galvanized steel strand are used for guying. Porcelain strain insulators insulate the guys from the ground. The wood poles are of chestnut 30 ft. in length, and are new.

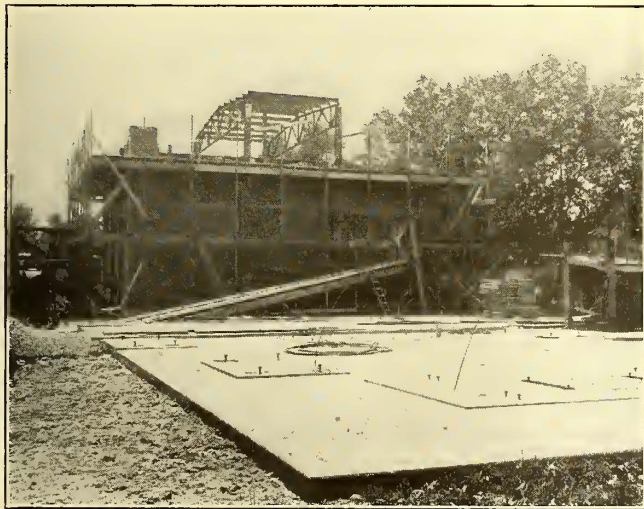


FIG. 13—FOUNDATIONS OF THE OUTDOOR SUBSTATION ANCHORAGES

Some idea of the amount of copper required for feeder purposes can be gained from the following excerpt from the bill of materials:

35,000 ft. of 500,000-circ. mil double-braid weatherproof cable.
 7,100 ft. of 1,500,000-circ. mil paper-insulated lead-covered cable.
 2,030 ft. of 1,000,000-circ. mil paper-insulated lead-covered cable.
 14,050 ft. of three-conductor, No. 0000, 13,200-volt paper-insulated lead-covered cable.
 1,300 ft. of 3,250,000-circ. mil base cable stranded 7 in. x 7 in. out of No. 2 soft-drawn copper wire.

UNDERGROUND CABLE LAYOUT

The positive cables run from the d.c. buses, as shown in Fig. 9, to manholes near the trolley feed lines. From these manholes they run in the form of rubber-insulated, lead-covered cables to switch boxes of the type already described. For these cables the boxes contain 1200-amp. quick-break front-connected switches. The splice to the paper-insulated lead cable is made by means of a rubber-taped joint. This type of splice has been the company's practice for years and very successful results have always been secured from it. In a similar manner the negative cables are connected to the track structures at the manholes. The underground conduits are vitrified clay. The manholes themselves are of

brick, with concrete floors. As the ground in which these manholes is located is very low, the water problem is a more or less serious one.

With the exception of the brick and steel work, all of the construction work of the electrical department has been carried on by the regular working forces of that department. The new track work was planned and constructed under the supervision of George B. Taylor, engineer of way, who also acted as co-ordinator for the entire construction project. Under the general supervision of G. A. Harvey, electrical engineer, the overhead construction was carried out by H. S. Murphy, engineer of distribution, while the design and superintendence of the new substation construction was handled by L. T. Klauder, construction engineer for the company.

Submerged Coal Storage Pit for Interurban Railway

Natural Depression and Stream Near Right-of-Way Provide Inexpensive Coal Storage Pit of 20,000-Ton Capacity

AT PRAIRIE CREEK, several miles from Cedar Rapids, the Iowa Railway & Light Company has constructed a 20,000-ton submerged coal storage pit. The site, directly adjacent to the interurban right-of-way, was selected because it is within easy hauling distance of the main 16,000-kw. steam power station operated by the company at Cedar Rapids, and because the nature of the ground made construction of the submerged pit comparatively easy. A small, clear stream with its adjacent low flood plain is crossed by the interurban railroad on an earth fill about 15 ft. high. Between this fill and the higher ground surrounding the flood plain there is a deep depression open only at the end nearest the stream. By throwing up an obstructing earthwork across this open end, a closed and nearly watertight pit, 460 ft. x 130 ft. x 15 ft. deep, capable of holding 20,000 tons of coal, has been formed. The earth at this point is covered by a thin stratum of fine sand under which is hardpan. The stratum of sand was scraped off, baring the hardpan, and the coal is being dumped on this with no further lining to the bottom of the pit.

Three longitudinal spur tracks, with a capacity of ten cars each, have been laid the full length of the pit and are supported on sturdy concrete trestles set in the hardpan. Drop-bottom cars can be emptied by dumping, and for other types an electrically-operated locomotive crane has been provided. It is the plan to keep the accumulated coal in this pit in storage against possible serious emergencies. When it is to be used it will be loaded in hopper-bottom cars by means of the locomotive crane and dumped into the hopper at the plant.

Water for submerging the coal is pumped into the pit from the near-by stream. The pumping outfit consists of a 500-volt direct-current motor, located in a small concrete and tile house and belted to a vertical shaft connected to a centrifugal pump in the basement of the house. This places the pump at the level of the stream. A small earth and rock dam thrown across the stream provides enough water to insure an adequate supply at all seasons. The water is delivered to the coal pit through two 4-in. iron pipes. The total cost of constructing the pit was approximately \$25,000.

Preparations for Future Electrification in Europe

Experimental Work Is Now Going On with a View to Quick Recuperation After the War

COMMENTING upon the article by Prof. Hugo Studer, of Zurich, in the issue of the ELECTRIC RAILWAY JOURNAL for Sept. 7, a correspondent of this paper points out a number of interesting facts regarding preparations being made abroad for electrification when peace returns. As Switzerland

has ample water power but is dependent for its coal supply on other countries and cannot get enough coal to operate its railways, this country has decided to electrify all railways. However, despite the urgent need for electrification now the difficulties of obtaining raw material for the

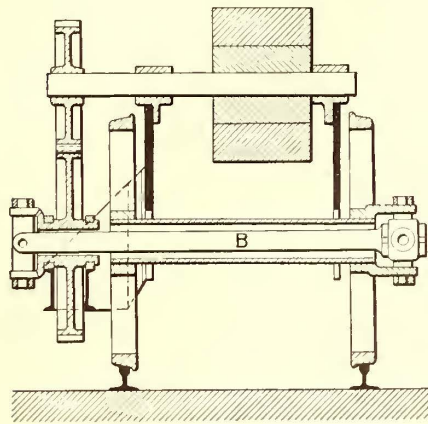
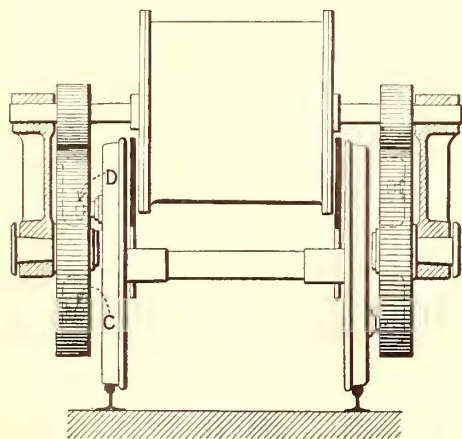


FIG. 1—TSCHANZ SYSTEM OF ELECTRIC LOCOMOTIVE DRIVE

manufacture of equipment will delay electrification for the present. In the meantime preliminary experimental work is going on.

Among the new types of locomotive being developed, two which are rather unusual in European practice are especially worthy of mention. They differ from most



FIGS. 2, 3 AND 4—ELEVATIONS AND PLAN OF ELECTRIC LOCOMOTIVE DRIVE PROPOSED BY BROWN, BOVERI & COMPANY

European locomotives in that they do not have side-rod drive. One of these, Fig. 1, is the design of O. Tschanz, and it employs a drive somewhat similar to the quill drive used in the United States. Instead, however, of

being transmitted through springs the driving effort is transmitted by means of a spindle, *B*, in the figure, through a hollow axle. Gears are located outside the locomotive frame, thus giving ample space for the motor.

Another drive, shown in Figs 2 to 4, has been proposed by Brown, Boveri & Company, of Baden. The advantage of this somewhat complicated scheme is that the center of the gear can be placed somewhat higher than the center of the axle, thus giving the designer more freedom in laying out the gears. As in the design previously mentioned the axle is relieved of all the weight of the gear and of all parts of the motor. In other words the gears and motors are spring supported. The driving force is transmitted through a system of

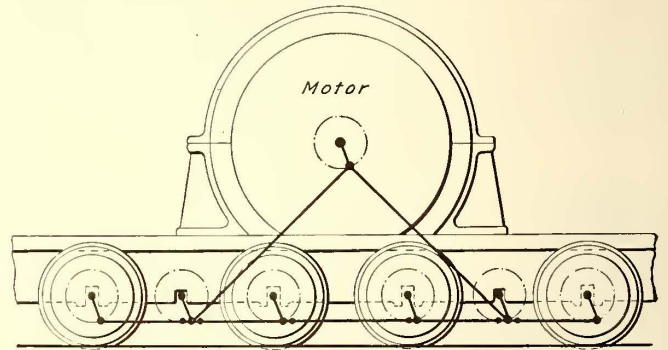


FIG. 5—NEW ELECTRIC LOCOMOTIVE DRIVE FOR PRUSSIAN STATE RAILWAYS

connecting rods pivoted to the gear wheel at *D*, and to the driving wheel at *C*. To prevent the system of rods from changing their symmetrical relation, two toothed segments, *H*, are connected rigidly to the lower rod *C*.

Another development in electric traction in Europe which is worthy of mention is the new double-rod system of drive. This is being applied in Germany on a locomotive with a single motor, the largest ever yet installed on an electric engine. According to a description in a recent issue of the *Schweizerische Bauzeitung* the locomotive is being built for the Prussian State Railways, for the Laubankönigszelt mountain line. The general features of the design are shown in Fig. 5. This locomotive is for passenger service and is of the 4-8-2 (unsymmetrical) type. The electrical equipment is being manufactured by the Bergman Company. It is for 16½-cycle single-phase current, the voltage being transformed down from that of the line to 350 at the motor terminals. The motor is rated at 3000 hp., is wound for twenty-six poles and at the rated power, makes 240 r.p.m. The weight of the motor is 22 metric tons, of which about 13 tons is the weight of the rotor alone. The armature diameter is 6 ft. 10½ in. and the commutator diameter 5 ft. 4 in. The weight of the entire locomotive is 108 tons, divided 55 tons for electrical parts, 45 tons for mechanical parts and 8 tons

heating apparatus. The adhesive weight is 66 tons. It is claimed that the riding qualities of this locomotive are good up to 56 m.p.h. The normal tractive effort is 14 tons and at starting is 20 tons.

What the War Board Is Doing for the Industry

Report Presented at New York Conference of the American Electric Railway Association Last Week Inspired Confidence and Appreciation—Mr. Gadsden's Informal Remarks Contained Further Information of Great Interest

SPACE and time limitations last week precluded the giving of more than a brief summary of the address with which P. H. Gadsden, then resident member at Washington and now chairman of the Electric Railway War Board, presented the first annual report of the board. Some of the good things which he said are given in more detail below.

WASHINGTON CORDIAL TO THE WAR BOARD

Through the war board the association has begun to receive national recognition. The board's usefulness at Washington and its opportunities for usefulness to the industry are growing. There is now no difficulty on the part of any member of the board, or in fact of any one connected with the association, securing an audience in any government department by simply stating that he represents this war board. The problems which the board has endeavored to work out relate to finance and to service, the main hope during the past eight months having been to secure federal intervention on behalf of the electric railways. Important in this connection were the letters between the President and the Secretary of the Treasury. (See Bulletin No. 11.) This correspondence was very helpful to the gas and electric interests but has rendered the electric railways very little service. Reports indicate many increases in gas and electricity rates but few increases to electric railways.

Relief to the electric railway industry has largely been confined to those states in which there are public service commissions, and to those states where the commissions had power to act, rather than to those in which appeal had to be made to the municipalities.

SOME STEPS IN THE DIRECTION OF NATIONAL RECOGNITION

In the board's effort to secure more direct federal aid for the electric railways the indorsement of the National War Labor Board was first secured. This was followed by an appeal to the President direct, on the part of the chairman and the directors of the War Finance Corporation. This set forth the critical condition of the electric railways, explaining that application were daily being made to the corporation for assistance which could not be considered because the net returns of these properties were decreasing and the equity disappearing. The Finance Corporation urged the appointment of a federal board to regulate

rates, and in extreme cases to take over the properties and operate them.

Later the board appeared before a meeting of public utility commissioners and furnished them with data showing the desperate condition of the industry. As a result they wrote to the President, urging him to appoint a board to advise them on this matter. While the commissioners were not disposed to abrogate their own powers the opinion was expressed by them that through a board of recommendation and request relief would be granted in 90 per cent of the cases. What they wanted was the opportunity to say that their ac-

tions were taken at the request of the national government. In this movement for more direct federal aid the board has had the support of the heads of governmental departments, and of organized labor. Mr. Mahon has co-operated with the board and has put the situation up to Mr. Gompers and Mr. Morrison from the labor standpoint. He has had several conferences with Secretary of Labor Wilson on the subject. There has probably been placed before the President during this war no question which has been presented with such unanimity as that of the electric railways' condition. There is ground for hope that something will be done although there are influences at work in Washington opposing such ac-

War Board at Washington

The Electric Railway War Board, due to its representative and authoritative character, has been able to establish cordial war-time relations with the governmental departments at Washington, and is hopeful of securing federal relief for the electric railways. On behalf of the board, P. H. Gadsden recommended the appointment of some kind of a representative body to act for the industry in peace-time also.

tion. Some men oppose it because they believe that it would militate against their broader plans for government and municipal ownership of public utilities. They would prefer to let the industry "go by the board" in order to facilitate the working out of their plans. However, it is the hope of the board that, due to the desperate situation, relief will eventually be granted.

THE INDUSTRY'S CONDITION IS BEING APPRECIATED

The electric railways of the country as a whole are bankrupt to-day, as is shown by their reports. Credit has gone. As there comes a time in the history of an individual or an industry when it is wise to make a virtue of poverty, so now the thing to be done is frankly and openly to let the public know just what the condition is. Sooner or later then some permanent solution of the problem will be found. The tabulations which have been sent out from the war board office in Washington have had an evident and powerful effect upon the public mind. Each railway could make similar statements in its own community. A community is apt

to think that a particular road is prosperous because its cars are filled. Monthly statements might well be made to show the public how increasingly desperate the situation is becoming.

One of the most important conferences arranged by the war board was with the Capital Issues Committee at which a number of railway men from different sections of the country were present. The vital necessity of curtailing unnecessary expenditures was urged, with particular reference to the paving burden which even in peace times is so heavy for the railways to bear. The result of this and succeeding conferences has been the practical cessation of unnecessary expenditures demanded by the public. The board is working in close co-operation with the Capital Issues Committee. On more than one occasion when complaints have been made that a municipality was requiring work of this kind to be done the committee has interfered, showing a determination to see that these expenditures shall stop.

JITNEYS ARE ON THE WANE

The war board has given considerable attention to the jitney situation with a view to putting it clearly before the government officers. One question has been as to the application of the "work or fight" order as it relates to jitney operations, the contention being that jitney operation is not an essential industry. Further the legitimacy of gasoline consumption by the jitneys has been brought into question. A third angle of approach has been that of the conservation of man power. Data collected by the war board show, however, that there is a very great decrease in the number of jitneys in the country and in time the problem of jitney competition may solve itself.

Among other efforts on the part of the war board to secure relief for the industry has been the endeavor to induce Congress to segregate utilities, and particularly electric railways, into a special class for the purpose of taxation. The matter has been put before the Senate finance committee and there is hope that the political branch of the government may appreciate the desperate need of the railways and come to their assistance. This was part of a propaganda to show the American people that the electric railways can no longer be considered purely as a local utility. They constitute a national industry and their straits impose a national problem.

WHAT THE WAR LABOR BOARD'S AWARDS MEAN TO THE INDUSTRY

In the matter of the awards of the War Labor Board the war board realized as soon as these were made that the burdens added to the industry by these decisions meant its destruction. It realized further that in a short period the same basis of compensation must be applied to every electric railway in the country, making an aggregate increase of more than \$100,000,000. What this means is evident from the fact that the 1916 records of the Internal Revenue Department showed that the net income of 1200 companies reporting was \$70,000,000 after paying fixed charges. Since then operating expenses have increased and, without any increase growing out of the War Labor Board rulings the net income is probably now not more than one-half

of what it was in 1916, say not more than \$25,000,000 to \$30,000,000. In addition it should be remembered that in 1916 four hundred companies had an actual deficit. When the labor increases are added to previous expenses it is doubtful if the net earnings of electric railways will amount to 50 per cent of the interest on their bonds.

The War Labor Board proceeded on the theory that any increase in wage scale could be compensated for by a correlative increase in rate, and that it could thus be passed on, as in the case of any other industry, to the public or the consumer. At that time the War Labor Board had reason to believe that the President might take favorable action upon its recommendation making it possible thus to pass on the wage increase by increasing the fare. But there was an economic factor here that was not adequately taken into account, namely, that an increase of fare would not, of necessity, provide the desired increase in revenue. Some features of the decision, also, were open to review, notably in regard to the wages of "miscellaneous help." Inconsistencies developed; for example, on one property machinists were allowed from \$50 to \$100 more per month than men of the same grade working for the steam roads. Cases like this permit the reopening of questions before the War Labor Board. Recent decisions indicate that the War Labor Board is beginning to consider revision of some of the essential details of labor contracts.

SOME SIGNS OF COMING DAWN

In the Kansas City case the company had a stipulation with its men that any increase in the wage scale must have some direct financial relation with the company's financial condition. When this case came before the War Labor Board the board was forced to the conclusion that it must be bound by the stipulation, that the jurisdiction of the board is thus limited. This is a distinct advantage over previous rulings. The most encouraging feature of the decision is in the recognition by the War Labor Board of the fact that certain classes of property could not be required to pay the wage scales that had previously been prescribed. For example, in the Memphis case the scale fixed was 36, 38 and 40 cents, or 2 cents lower than any scale previously announced.

The War Labor Board was organized originally to represent the great industries of the country, which were asked to nominate men for membership. No consideration was given to electric railways as no one thought of them in connection with the problems which might come before it. It developed, however, that the major portion of the time of the board has been required for electric railway cases which have formed a large percentage of the cases coming before it. Mr. Taft and Mr. Walsh have given practically their entire time to these cases. An opportunity has now presented itself by which the electric railway industry will probably have more direct representation in the War Labor Board.

Whatever measure of success the war board has had in Washington has been due to the fact that for the first time there has been assembled in Washington a body of men with authority to speak for the industry as a whole. Many of the difficulties in which the electric railways now find themselves are attributable to

lack of sufficient team work. Each road has been handling its own problems regardless of the interests or rights of its neighbors. The result has been confusion of counsel and lack of unity of purpose. One lesson that the war has brought home is the vital necessity of keeping together in the future. All over the country people are beginning to speculate as to what will happen when peace comes—and peace is imminent now. There will be a tendency to drift back into the old channels. This tendency must be resisted with the utmost determination, for if after the restoration of peace the electric railways drift back into pre-war conditions they will deserve what will come upon them.

What the war board has been able to do at Washington can be credited to the fact that when a Cabinet member or any officer of the administration was con-

Portland Has Fourteen Shipyards

PORTLAND'S possession of the Willamette River and the nearness of the Columbia River (Vancouver) has made a wonderful center of both steel and wood shipbuilding. The steel yards number five, and the wood plants nine. Most of these are within easy reach of existing Portland lines.

The Portland electric railways are both standard and narrow gage, the latter in the majority. As far as possible the yards are served by special routings, so that riders can be distributed near to their homes or to downtown transfer points—all of course, for one fare, except the 15-cent Vancouver line. The variety of yards, their scattered location, the differences in shifts and the frequent overtime give the effect of

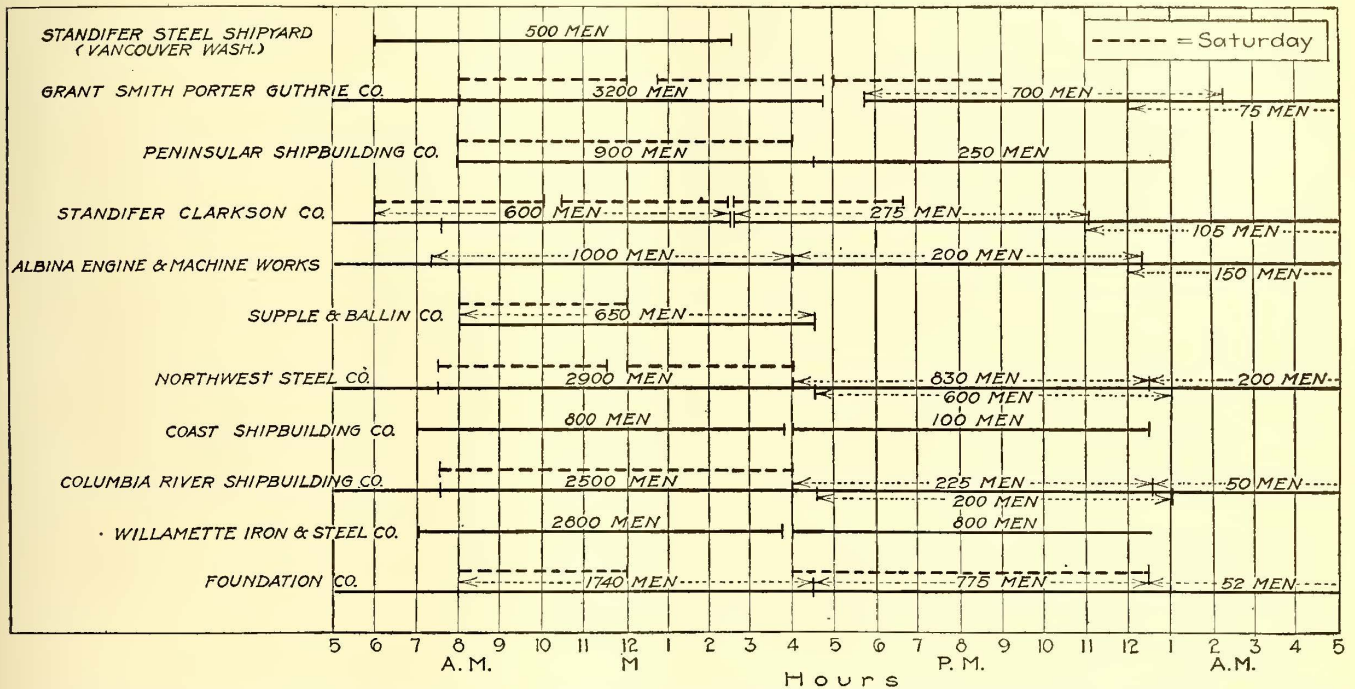


CHART SHOWING RELATIVE PROPORTION OF MEN AND WORKING HOURS IN THE SHIPYARDS OF PORTLAND, ORE.

sulted he realized that the war board represented a great national industry with \$5,000,000,000 behind it. The board has been able in some degree to lift the industry out of its parochial habits, to instill into the industry the habit of thinking collectively, in terms of the industry. This work should be continued. There should be brought about a situation in which it will be realized that anything that affects a local property is really a matter of national concern. There should be some unity of purpose, some general plan that can be applied throughout the country. Heretofore individual interests under the pressure of special financial conditions have attempted unaided by the general industry to work out their peculiar problems in their private and individual ways. Pressed by exigencies of the local situation they have made concessions which have established troublesome precedents. To put the industry on a sound, wholesome and prosperous basis methods of doing business must be radically changed. In peace times to some body of men must be delegated the power to act for the industry as has been done in war time. Some machinery of representation must be set up.

staggered hours so that excessive peaks are avoided. The Northwest yard has the largest peak, one of twenty-three cars.

The accompanying diagram gives a good idea of the relative proportions of men and working hours in the shipyards. The number of men is, of course, constantly growing.

In one case, favorable loading conditions make it possible for the same cars to pick up the Willamette, Columbia and Northwest men in order and then to return for employees of the Foundation Company. In general, any service shortage at Portland is due more to lack of men than to lack of cars.

The possibilities in the line of accident reduction were demonstrated in St. Louis, Mo., during "Safety Week," Sept. 15 to 21. According to the statement of Dr. R. S. Vitt, coroner, only one accidental death occurred, that of an intoxicated man who fell from a wagon. This compares favorably with ten deaths during the preceding week and twenty-four in the corresponding week in 1917. The total number of accidental deaths for 1917 was 510.

Vancouver Freight Earnings \$1,000 a Week

British Columbia Railway Has Built Up an Interurban and Transfer Freight Business on Steam Railroad Basis—Freight Revenues Exceed the Earnings from Passenger Traffic

IT IS a noteworthy circumstance that electric railways which have made a success of freight business are always found to be living in amity with their steam neighbors. This is illustrated again in the case of the British Columbia Electric Railway.

The first interurban line between Vancouver and New Westminster was simply a single-track line. Next, in 1904, the company added, by lease, the Lulu Island line of the Canadian Pacific Railway which was then electrified. Then, as shown in the accompanying map, a line was built from Eburne on the Lulu Island line to New Westminster, thus giving a second connection between Vancouver and New Westminster. In 1910 came the 63.8-mile extension from New Westminster up the Fraser Valley to Chilliwack. In 1911 came the last new route in the form of the Vancouver, Fraser Valley & Southern Railway. This last construction, therefore, gave three routes between Vancouver and New Westminster, the central double-track route of which carries the bulk of the passenger traffic while most of the freight on the Chilliwack line goes via Eburne.

Oats and hay are the principal products of the Lulu Island section, while the fertile Fraser Valley also ships fruit, vegetables and milk. Lumber and shingles are big items at Eburne and New Westminster. Recent additional sources of freight are vegetable evaporating factories.

The Fraser Valley contains the tracks of the Great Northern, Canadian Northern Pacific, Canadian Pacific and Canadian Northern railroads, all of which serve Vancouver, yet the British Columbia Electric Railway offers the shipper the most advantageous route for local freight, even as far as Chilliwack. It also acts as the delivery line of the Chicago, Milwaukee & St. Paul Railway for all of its westbound traffic into Vancouver.

At one time the electric railway received only the

local rate of 2½ cents per 100 pounds to the nearest junction point on the steam line. Thus an Eburne shipper was at a disadvantage as against the New Westminster shipper who enjoyed a terminal rate out of that city over the Canadian Pacific. Now the electric railway gets the coast rate from any point on its lines to all points in the United States and Canada, and it also gets the longest haul possible over its own tracks on any traffic which it originates. The arbitrary division on the pro rata basis is somewhat less than the local rate but there is more business of that character.

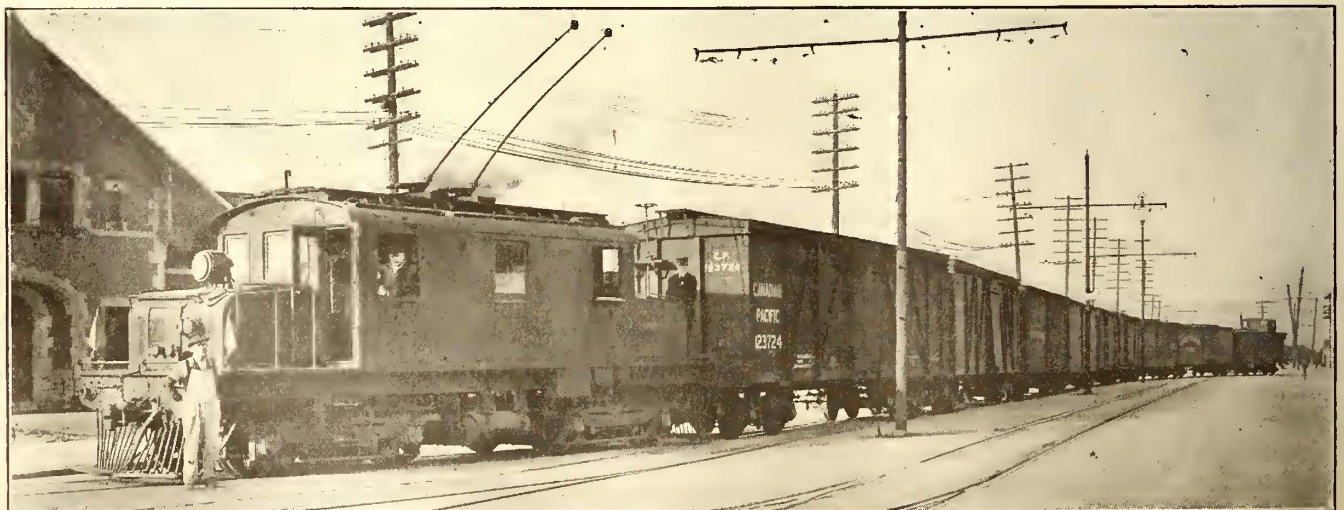
For the last five years the railway has been operating on steam railroad tariffs. In the spring of 1918 the Canadian Railway Board granted a 10 per cent increase to steam railroads. As the plea of the steam roads was based upon the high price of coal, this electric railway, fed by water power, had to prove its case on other grounds. It received the increase within a month after formal application. It has had no trouble in getting all local business except that the less-than-carload business between Vancouver and New Westminster has gone to motor trucks since the road between those cities was paved. However, this represents little loss to the company as the rates were too low, nor are the motor trucks finding it a profitable business.

As to terminal switching: several years ago the Canadian Railway Board issued an order whereby any

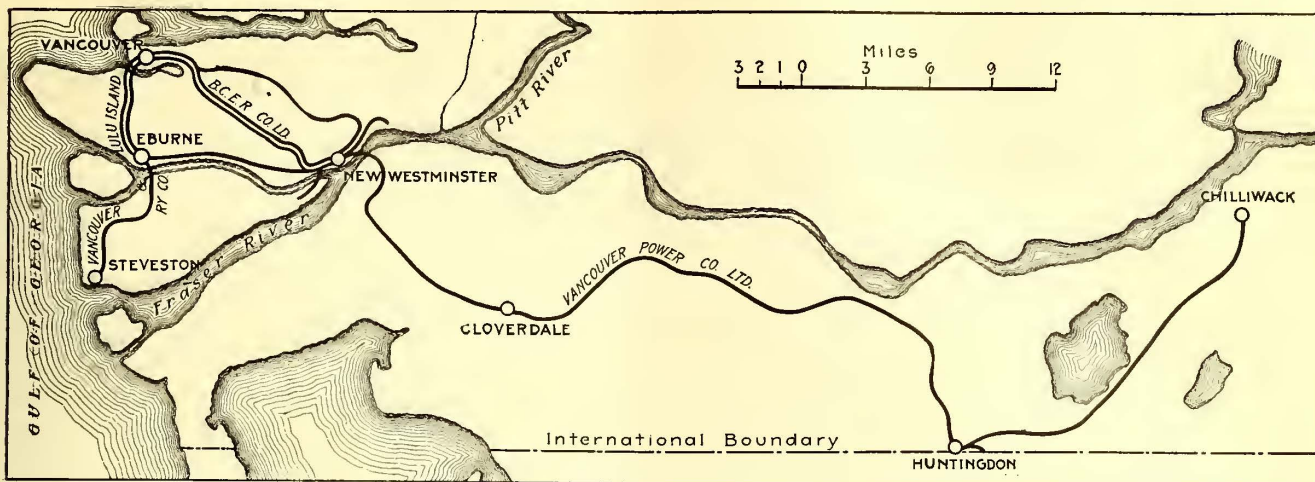
TABLE I—NUMBER OF CARS INTERCHANGED WITH CONNECTING LINES, APRIL, 1918

Railway	Cars	Revenue
Canadian Pacific	637	15,045.43
Canadian Northern	113	3,510.14
Great Northern	77	1,503.04
Northern Pacific	35	1,021.82
Bellingham & Northern	18	496.36
	880	\$21,576.79

Westminster report not included for period ending 21st and 30th.



FREIGHT INTERCHANGE, CANADIAN PACIFIC RAILWAY AND BRITISH COLUMBIA ELECTRIC RAILWAY, AT NEW WESTMINSTER, B. C.



MAP OF BRITISH COLUMBIA ELECTRIC RAILWAY, EXCLUSIVE OF VANCOUVER ISLAND

line with terminal facilities must grant switching facilities to other lines under a tariff not exceeding \$8 per car with a minimum of \$3. Under a recent order this has been changed to 1 cent per 100 lb. with a minimum of \$3 and no maximum. This order applies to any line subject to the Board under Dominion charter, having nothing to do with provincially-chartered lines. However, the steam lines raise no objection to carrying out this order anywhere on the British Columbia Electric Railway although the important Chilliwack line, for example, is not under a Dominion charter.

The average earnings per car handled are \$25. The number of cars interchanged per month during 1917 was 700; to date during 1918 it has been 800 or more, as shown in Table I, which gives the figures for April, 1918. About one-half the tonnage is through freight.

\$1,000 A WEEK FREIGHT EARNINGS

Table II details the growth of the various branches of the freight, baggage and passenger business. From this it will be seen that in 1917 the freight and baggage department began to outstrip the passenger

TABLE II—DIVISION OF FREIGHT AND PASSENGER BUSINESS, BRITISH COLUMBIA ELECTRIC RAILWAY

	1915	1916	1917	Increase	Decrease
*Freight.....	\$240,611.94	\$266,233.90	\$377,123.19	\$110,889.29	
Car rental.....	2,595.50	3,165.50	6,020.00	2,855.50	
Switching.....	18,398.45	23,713.51	35,532.92	11,819.41	
Baggage.....	2,000.10	1,176.79	1,535.45	358.66	
Milk.....	48,514.69	44,659.00	40,092.75		\$4,567.25
Total freight,	\$312,120.68	\$338,948.70	\$460,304.31	\$121,355.61	
Passenger.....	\$552,342.39	\$434,688.12	\$416,079.02		\$18,609.10
Total earnings.....	\$864,463.07	\$773,636.82	\$876,383.33	\$102,746.51	

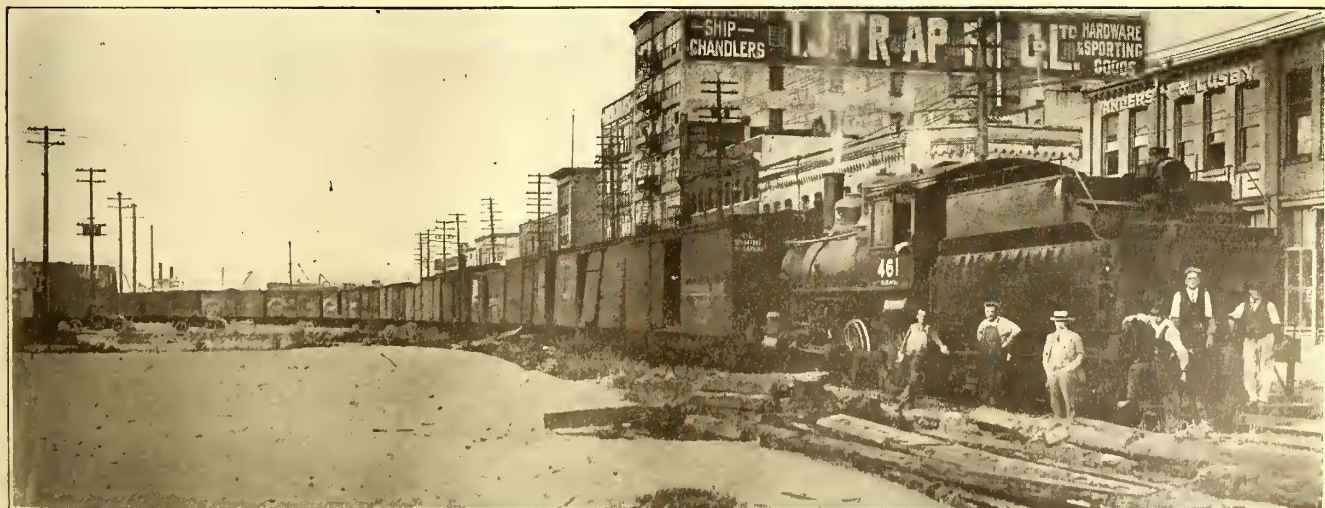
* Freight is divided into two classes as follows:

	Local	Foreign
Year ended 1916.....	\$148,017.42	\$118,216.48
Year ended 1917.....	183,189.56	193,933.63
Increase.....	\$35,172.14	\$75,717.15
Foreign cars handled, 1917—7871. Average earnings per car, \$24.63		
Foreign cars handled, 1916—5033. Average earnings per car, 23.48		
Total tonnage hauled, 1916—218,063 tons		
1917—324,280 tons		

TABLE III—SUMMARY OF BUSINESS BY DISTRICTS

District	Source of Income	1916	1917	Increase
Vancouver—Westminster	Passenger,	\$186,928	\$177,077	d \$9,851
	Freight,	39,324	38,735	d 589
	Total,	\$226,253	\$215,812	d \$10,440
Lulu Island.....	Passenger,	\$89,292	\$86,164	d \$3,128
	Freight,	63,254	108,870	d 45,616
	Total,	\$152,546	\$195,035	\$42,489
Chilliwack (Fraser Valley)	Passenger,	\$127,552	\$121,983	d \$5,569
	Freight,	227,473	302,582	d 75,109
	Total,	\$355,025	\$424,566	\$69,540
Vancouver—Southern....	Passenger,	\$34,815	\$31,611	d \$3,204
	Freight,	5,227	4,217	d 1,010
	Total,	\$40,043	\$35,829	d \$4,214
Net increase.....				\$97,374

d—Decrease.



BRITISH COLUMBIA FREIGHT TRAIN AT SWITCHING POINT, NEW WESTMINSTER

earnings, being \$460,304 as against \$416,079. The decrease shown in passenger travel was due to the Vancouver-New Westminster jitneys, whose greater speed has captured much business although their one-way fare is 25 cents against the electric rate of 25 cents one way and 35 cents round trip. The estimated total freight for 1918 is 350,000 tons equivalent to \$520,000 or \$1,000 a week.

The company has but one regular freight solicitor. His headquarters are at New Westminster from which place he can conveniently reach a majority of the shippers. Any solicitation necessary at Vancouver is handled by W. D. Power as part of his duties as general freight and passenger agent. Terminal practice is in all respects similar to that of steam lines. Telephone notification is used wherever possible, particularly in the case of perishable freight. At the larger terminals, the consignee receives all papers by messenger. In accepting goods at stations which have no agents the conductor issues a pick-up waybill which is given to the agent at the following agent station or at the nearest terminal for conversion to a standard waybill.

That fast handling of freight has helped the company to build up a large business is indicated by the fact that freight accepted before 5 p.m. at Vancouver is in Chilliwack before noon of next day. Less-than-carload freight is started between these points every night so that deliveries are easily made within twenty-four hours. Two freight trains a day are operated with four crews, due to splitting of runs. These are hauled by electric locomotives but grades preclude long trains. The company's own cars do not leave its tracks except for switching. However, the company is a member of the American Railway Association and subject to all its rules except that the demurrage charges are in accordance with the rules of the Canadian Freight Association.

The company's express business, largely packages and perishable vegetable and fruit, is handled at rates less than those charged by old-line companies. A delivery service is included at Vancouver owing to the competition of the Canadian Northern Railway via Chilliwack. For this purpose the company has the use of two motor trucks, although one is usually enough. Milk is carried in three-car all-motor express trains which make the 75-mile, forty-stop run from Chilliwack to Vancouver in four and one-half hours. The load averages 600 10-gal. cans. Milk tickets are of the usual return-stub style.

ELECTRIC FREIGHT EQUIPMENT

The locomotive equipment for the freight business comprises three 60-ton Dick-Kerr, five 55-ton Baldwin-Westinghouse and three 45-ton Westinghouse machines.

Each 60-ton unit has four 175-hp. Dick-Kerr forced draft motors but with Westinghouse HB control; each 55-ton unit has four 250-hp. forced-draft motors and HB control; each 45-ton unit, used for switching, has four Westinghouse 112-B motors and K-34 control.

The Union Traction Company of Indiana, Anderson, Ind., is employing women oilers. The three at present on duty are handling the work satisfactorily during the absence of the men for military service.

Railway Electrification After the War

Several European Countries Contemplate Extensive Developments, While Results Achieved on Main-Line Electrifications in This Country Have Been Highly Successful

IN COMMENTING upon the prospects of speedy steam railroad electrification the *Electrical Review*, London, says editorially that there is every reason to believe that when peace returns such electrification will become one of the most important and pressing questions that will then arise. Among the factors which have influenced the growth of opinion in this direction may be cited the urgent necessity of economizing fuel, the scarcity of labor, the dearth of raw materials, and the need for improvement in transportation facilities.

In countries which possess but scanty fuel resources, or none at all, such as Switzerland and Italy, but which are blessed with an abundance of natural water power, the adoption of electric traction is obviously inevitable, and plans are being projected on an enormous scale to carry out schemes of a most comprehensive nature.

Proposals have been submitted by the managers of the Swiss Federal Railways to the Council of Administration which involve an expenditure estimated at from about \$600,000,000 to \$800,000,000 to be spread over a period of thirty years. In Italy preparations are under way for the electrification of the whole of the railways in the north, together with a supply of electricity for all industrial purposes on a gigantic scale. France, like Italy, already possesses a considerable mileage under electric traction and contemplates important developments in this respect, while Norway and Sweden have carried out noteworthy schemes and contemplate others.

In the United States we find the greatest development, for there electric traction has been put to the severest tests in main-line operation, and has been proved capable of handling the heaviest loads on stiff gradients with efficiency and reliability far in advance of steam haulage. In Austria the Ministry of Railways proposes to utilize all the water power available in the Alpine District and in Dalmatia, and to electrify as much as possible the railways south of the Danube on the single-phase system.

In Great Britain such water powers as are available are too small and too remotely situated to affect the railway problem, except in a few localities, but none the less the matter is of pressing urgency. Fortunately in no country in the world, with the possible exception of Belgium, is the traffic so dense as in England, a condition favorable to electric traction.

Manchester Corporation Tramways' Roll of Honor

Manchester Corporation Tramways has recently issued its "roll of honor" in pamphlet form, giving by name and grade the men who have enlisted from the tramways for king and country, with a supplementary list of those who have made the supreme sacrifice. Tabulated, the pamphlet shows:

Enlisted for active service from the traffic section.....	1320
Enlisted for active service from the other sections.....	1069
Total enlisted.....	2389
Died in active service.....	227
Officially reported missing.....	38

Results of Journal Canvass of Opinion on Mortimer Resolution

Opinions of Electric Railway Executives Throughout the Country Show Desire to View the Subject of Municipal Ownership in Broad Way, but the Belief Is General that the Time Is Not Opportune for So Radical a Step

AT THE CONFERENCE of the American Electric Railway Association held in New York on Nov. 1 a paper was read by Richard McCulloch, president United Railways of St. Louis, advocating public ownership of electric railways, and J. D. Mortimer, president North American Company, presented a resolution to the same effect. The paper and resolution were printed in the issue of the *ELECTRIC RAILWAY JOURNAL* for Nov. 2.

At the conference there was not time for full debate of this resolution, which was referred for action to the executive committee. To bring out the opinion of the industry generally the editors of this paper telegraphed a number of executives in the East and Middle West to permit them to put on record the present attitude of the industry on the subject of municipal ownership. No attempt was made to reach companies located west of the Rocky Mountains as the copies of the *JOURNAL* containing the resolution would not have reached them in time. The telegrams received and the substance of interviews with executives who could be personally reached from the New York office are given below. Other contributions to the discussion are invited.

Service-at-Cost Plan Is Best

Regarding the subject matter of the Mortimer resolution, I would say that as owner and operator of street railway properties I might, from a selfish viewpoint, favor ownership of street railways by municipalities under present conditions, but with the knowledge of the business such as I have I might not favor ownership of a street railway property by a municipality in which I lived. Through the trained expert management of private ownership of these properties the public should receive the most efficient service at the minimum cost to the individual rider. It occurs to me that a better solution of the problem is a service-at-cost plan plus a fair return on the capital invested or an arrangement between the municipality and the owner or owners of the street railway, such an arrangement to be automatic permitting and requiring rates to be increased or decreased as might become necessary to produce only the agreed return on the investment after taking care of all proper reserves.

J. F. STRICKLAND,
President Dallas (Tex.) Railway.

Regulating Bodies Must Exercise Broad Vision

The question of municipal ownership of electric railways is only one phase of the broad subject of public ownership of public utilities generally. Viewed merely from the standpoint of the electric railway owner or operator, little is to be feared from the general adoption of the principle of public ownership. Viewed, however, from the standpoint of the citizen interested in the future

welfare of our country the wisdom of adopting that principle is subject to grave doubt, especially if accompanied by public operation. Public ownership is, however, inevitable unless the powers of regulatory bodies, federal and state, are exercised with such breadth of vision as to encourage the flow of private capital into electric railways. Otherwise impairment of service and curtailment of extensions will be such that the public will be compelled, for self-protection, to take the properties over. The real solution of the problem of relations between public and utilities is apparently to be found in a system which, whether the utility be publicly or privately owned, provides for private operation under public supervision, adequate returns to capital being assured by rates which can be quickly varied to meet advancing costs.

ARTHUR W. BRADY,
President Union Traction Company of Indiana.

Municipal Ownership the Ultimate Solution, but the Cities Are Not Ready for It Now

Public utilities involving sanitary principles and public health, such as those serving the water supply, sewage and drainage system, should unquestionably be municipally owned and operated. The others, including electric railways, are destined for ultimate municipal ownership, but in my judgment this time has not yet arrived. There are three states in the existence of the essential utility. The first is the creative period, when private enterprise initiates, owns and operates; the second is the transitive period when through co-operation or partnership the public joins with the private enterprise in sharing the responsibilities of the utility; the third and ultimate period is that of public ownership and operation. Before the war we began as an industry to leave the first period and are now entering rapidly into the second, but just as the first period extended over a number of years, so too will the second, although probably not for so many. American municipalities, handicapped as they are by unscientific, inefficient and otherwise more or less defective systems of government, traceable for the most part to the evils and weaknesses of short tenure of office, are far from ready to take over the added responsibilities and burdens of such highly organized and technical institutions as the electric railways. Admitting that the industry is now being sorely tried by the tremendous difficulties and problems imposed by the war, that is our share of burden, our contribution toward the success of that great cause. That this share is disproportionately excessive is unfortunate but is not justification for passing the burden to others, even though it may afford a fleeting grim satisfaction to the distressed utility official and operator. We would be remiss in our duties as citizens and as trustees for the utilities to urge mu-

municipal ownership now. The Pacific Coast cities, which are now forcing premature municipal ownership, are not safe guides, for their passion, prejudice and obstinacy, not monopolized by either side, have apparently obscured calm reason and sane judgment.

F. W. HILD,

General Manager Denver Tramway.

Favors Municipal Ownership with Allowance for Franchise Value

The Mortimer resolution is one of tremendous import to the public and the electric railway industry, and brings to a head the thoughts that have been in the minds of most executives for some time. I believe it to be our duty to protect the interests of the stockholders to the fullest extent, and from this standpoint a purchase of the properties by the municipalities at a fair price would be a practical solution. I feel that the resolution deals too lightly with franchise value, as the owners of the properties are justly entitled to full recognition of all early developmental expense and to compensation for the burdens which the stockholders carried without return during the development of the industry. Common justice would indicate as a fair measure of value the three pre-war-year earnings as a basis of worth, which is the standard adopted by the federal government in the case of the railroads. From the standpoint of the public I believe that it would be far better served by private ownership if, in granting franchises, the authorities would be sufficiently liberal to allow a fair profit which would give an incentive for efficiency.

This result, however, seems to be impossible of accomplishment and for that reason I am inclined to indorse the resolution with the reservation as to franchise value above referred to.

HORACE LOWRY,

President, Twin City Rapid Transit Company, Minneapolis.

Affirmative Action on Resolution Would Be Disastrous

We feel that the introduction of the subject of municipal ownership as a factor in the solution of the grave difficulties which now confront the street railways of this country is a very serious and unfortunate mistake and may result in great harm to the industry. This company as well as numerous others have been compelled for many years to combat the principle of municipal ownership of street railways and has had valuable assistance from the American Electric Railway Association. The same principles and reasons against permanent ownership and operation of street railways by municipalities, states or federal government which have applied in the past are fully as convincing now. A comparison between the development of and service rendered by street railways and other public utilities in this country as compared with European countries where governmental ownership has prevailed is, we think, the best argument for private ownership. Affirmative action by the association at this time on the proposed resolution would in our opinion be disastrous and the serious consideration of such a resolution, we feel, has already been not only unfortunate but detrimental to the industry.

CAPITAL TRACTION COMPANY,

Washington, D. C.

Either Full Co-operation or Public Ownership Is the Answer

The intensive rural development of the electric railways throughout the East has produced a condition that cannot be corrected by municipal ownership strictly, but relief can come only through state ownership, if the lines through the country districts are to be kept in operation. The plight of the traction properties is so acute that continuation of service can be assured only through active co-operation of the communities and the traction utilities, and it is to be hoped that some workable solution can be found by a change in the bases upon which the industry has been founded. If such full co-operation is not forthcoming, and that at once, there is no solution from the standpoint of either the community or the utility—but public ownership, for in that way the varying costs of producing service can be met through direct tax assessments upon the community at large. It would seem reasonable for the inhabitants of a particular territory comprised of a number of small towns to demand that the state take over the traction lines when they are faced with the abandonment of a portion of those lines through the financial inability of the utility to continue operation. Regardless as to whether the individuals all use the service, the prosperity of the community as a whole depends upon the street car service and in so far as there are deficits accruing from the operation of the cars an equitable assessment upon all the community through the general tax would not be unreasonable.

L. S. STORRS,

President the Connecticut Company, New Haven, Conn.

Cincinnati Plan Insures Good Service and Fair Return

I am distinctly opposed to municipal ownership of electric railways. Municipal ownership does not benefit the car rider or reduce the cost of car riding, and uniformly imposes additional burdens upon the municipality. Private operation is more efficient and more economical. I am not opposed to, but indeed favor, proper municipal control. I am of the opinion that the Cincinnati plan as embodied in the ordinance recently enacted, establishing service at cost including in such cost a fair return on invested capital, with municipal control and incentive to efficient and economical operation through division of surplus earnings over amounts required, is the most satisfactory solution of the problem. This plan gives the city the right to fix the quality and quantity of service desired and provides the machinery for changes in rates of fare to accomplish this, which is just to the public, the employee and the investor. The Cincinnati ordinance provides for increases or decreases in rates of fare by half-cent steps and changes cannot be made more frequently than in three-month periods. The city requires an annual budget of expenses, has control of extensions and improvements, and approves the accounting system and issues of capital. The company is guaranteed a fixed return based on an agreed valuation and on the cost of money for future capital expenditures. This plan gives the public all of the advantages with none of the disadvantages of municipal ownership.

W. KESLEY SCHOEPP,

President Cincinnati (Ohio) Traction Company.

Solution Lies Between the Two Extremes

Somewhere between the two extremes of purely private or wholly public ownership and operation, I believe the solution lies. The discovery and exposition of this solution is the one most important, most eminent job before the American Electric Railway Association. In the quasi-partnership between the City of New York and the operating companies in the "dual system" we have an example of public partnership and private operation under public service commission regulation. The dual subway contracts provide for a full and complete supervision by the city, through the Public Service Commission, of all operations by the lessee relating to construction and equipment, and, when the city—under the pooling arrangement effective next January—becomes interested therein, in operating expenditures as well. All important contracts require actual approval by the commission, and the city, upon inspection of accounts, which the company must keep as the commission directs, may object to any expenditure which it deems unreasonable or improper. The Interborough Rapid Transit Company is not opposed to this full measure of public representation in its problems. The desire of the public for representation in the direction of a service touching the people so intimately, is both natural and proper.

When the public's representatives are faced with the problems of making both ends meet, either by increased fares or by taxation, the public will accept their acts as justified, even if they do mean higher fares, because the public will know that their representatives have acted upon their knowledge of the situation acquired through their supervision.

To justify their decisions and acts the public's representatives will be forced to educate the public to the impelling facts, and the public will then come to realize—as plainly as it now does not—that service can be only what the public-car riders or taxpayers are willing to pay for. It will also come to appreciate at its true value the situation in which the industry finds itself now. And if it decides to put up with less service to keep down the cost it will do so with full knowledge of the facts; it will not expect 10 cents worth of service for a nickel. But public ownership and public operating would, in case of unsatisfactory service, result in merely a change of political control.

THEODORE P. SHONTS,

President Interborough Rapid Transit Company.

No Good Reason for Capitulation to the Political Prejudices of the Hour

The unprecedented conditions confronting our industry have not altered the principle of sound business nor the obligation of the companies to the public in the way of service nor to the investor in the way of return, and in view of the fact that municipal ownership has invariably proven a failure we can see no good reason for a capitulation on the part of our industry to the political prejudices of the hour. On the contrary, this is the time when we should stand to and carry on, relying for final victory on the sincerity of our purpose to serve the public and discharge our obligation to the investors in the industry.

THOMAS S. WHEELWRIGHT,

President Virginia Railway & Power Company, Richmond, Va.

Automatic Rate Adjustment a Desideratum

I am not in favor of municipal ownership, but I do favor, first, the making of an arrangement with the municipalities so that the investors will get a reasonable return upon their investment; second, the establishing of a minimum and maximum surplus with provision so that when the maximum surplus is reached the rate will automatically decrease and when the minimum surplus is reached the rate will automatically increase, or, third, the arranging of a rate by which a surplus will be created sufficient to amortize the invested capital through a sinking fund over the period of the mortgages. In either case, the city is to have representation sufficient to protect the interests of the people.

E. G. CONNETTE,

President United Gas & Engineering Corporation,
New York City

Present Conditions Make Public Ownership Inevitable

In Maine we have tried out increased rates for trolley service and drastic curtailment of service, but results are unsatisfactory and fail to meet the constantly increasing costs of operation. The situation generally indicates clearly that the public must own and operate trolley roads if the service which it demands is to continue.

A. H. FORD,

General Manager, Cumberland County Power & Light Company, Portland, Me.

Situation Demands Careful Analysis by State Authorities

Municipal ownership of street railways may be the proper step to save the service to the public, but past results from operation of this character throughout this country have a strong tendency to make the thinking people approach such a subject with great caution. Municipal ownership, however, only covers large city operations and does not seem to reach suburban companies such as ours, operating thirty-two separate and distinct corporate cities, towns and boroughs. It suggests to us that application be made to the governors and legislatures of the states for a careful investigation and recommendation for state control with responsibility.

T. A. WRIGHT,

Vice-President Wilkes-Barre (Pa.) Railway.

Canadian Coin Problem of the International Railway

The International Railway, Buffalo, N. Y., which operates partly in the United States and partly in Canada, is charging a discount on Canadian currency tendered to it in the United States. The reasons are these: Canadian visitors to Niagara Falls use Canadian currency, which in the early stages of the war was accepted at par by United States merchants and banks. Lately, however, the banks have refused to take deposits of Canadian money without charging a discount ranging nearly as high as 3 per cent. To overcome this difficulty, the company has been depositing its Canadian money with its banks in Canada, but the American banks are now charging exchange on funds withdrawn from the Canadian banks. The company has therefore instructed its agents to accept Canadian currency only at a discount.

“Fighting” Snow

A Square Deal for the Regular Car Equipment Involves the Provision of Adequate Special Apparatus and Intelligent Use of Both

BY J. M. PNEUMAN*

Railway Engineer, Westinghouse Electric & Manufacturing Company, Pittsburgh, Pa.

THE term “fighting snow” is one most commonly used by electric railway operators in describing difficulties encountered in maintaining their car service during winter months. It was, therefore, used very frequently during the past three winters, as the snowfall was unusually heavy and the average temperature away below normal last winter. The fact that so much trouble was experienced on most roads with their motors and car equipments shows that there is something radically wrong in the methods usually followed to keep tracks clear of snow, if any method at all is used. While the object of this article is not to provide a “cure-all” for snow conditions, an attempt will be made to show good practice in anticipating conditions which might be imposed by snow and to summarize the known methods of actually “fighting snow.”

Many motors fail under bad track conditions due to snow, because the value of good snow-fighting equipment is not appreciated. Severe snowstorms are placed in the same category as washouts on the line, wrecks, fires, etc., in other words, conditions which are to be met in the best possible manner when they occur are ignored. This is obviously wrong for snow is as sure as winter, although the depth of snowfall varies.

It is human nature to see what any piece of machinery will do in a pinch. The man with an automobile will brag about what “she” did on certain steep hills in high gear; the motorboat operator will tell how “she did so-and-so in a bad storm and never shipped a drop”; the street or interurban car crew will boast that “she ran so many miles bucking 3 ft. of snow on the level, went through several drifts half as high as the car and only got in about ten minutes late,” etc. This kind of running makes very interesting conversation, but from a dollar-and-cents viewpoint it does not arouse the same degree of elation.

In purchasing motors for certain cars and service it would, of course, not be feasible to get motors greatly over size in order to have sufficient capacity to take care of themselves when “bucking snow,” unless they are intended primarily for the purpose of keeping tracks free of snow. It is, however, good practice to anticipate these conditions to a certain extent in purchasing motors for freight and passenger cars. The ideal condition is to have revenue cars properly motored with suitable snow-fighting equipments at hand to keep tracks clear of snow when storm conditions arise. Some of the different types of snow-fighting apparatus and their application to certain conditions are outlined in the following paragraphs.

*Mr. Pneuman has had a wide operating railway experience in which he has come into intimate contact with snow-fighting problems. He was for four years foreman of electric locomotive and car maintenance for the New Haven Railroad, at Stamford, Conn., and later was master mechanic of the Annapolis (Md.) “Short Line,” and electrical engineer of the Buffalo, Lockport & Rochester Railway.—EDITOR.

On some roads stiff brushes of bamboo splint have been installed ahead of the front car wheels. These have given fair satisfaction on city tracks in keeping rails clear when the snowfall is light. As they merely push snow from the rail on both sides, they are not to be depended upon to maintain service during heavy snowfalls. They are used, however, with success in keeping third rails snow-free on roads using this system of current collection.

Snow scrapers, backed with heavy springs, installed on beams ahead of the front wheels, satisfactorily keep rails and flangeways clear of snow and throw out the snow to a much greater extent than snow brushes. Revenue cars equipped with scrapers, with an additional scraper to keep down snow in the center of the tracks, will do much toward keeping tracks clear if run at frequent intervals. In paved streets where brooms are used to keep the centers clear, the two scrapers ahead of the wheels are desirable to keep the snow out of the flangeways.

Snow sweepers are the main stand-by for street car systems. They are put out on all lines as soon as snow begins to fall. They should be equipped with wings in order that the snow which accumulates beside the track out of reach of the brooms may be shoved back near to the curb line. These brooms should be set just to reach the pavement and not so low that they become “pavement polishers,” wearing out splints rapidly while failing to remove the snow properly.

As a rule plows have their application on suburban, interurban and standard steam roads, although it is necessary to use them on some city properties. On roads operating with long headways, plows should be run ahead of regular cars during storms as much as possible. Plows are efficient to the point where snow becomes banked to such a height beside the roadway that they are unable to throw the snow from the track to the top of this bank. Plows properly motored can get through large drifts if there is any open space beyond the drift, into which the snow can be pushed. The plow should be applied to the car in such a manner that it may be raised and lowered when going over guard rails and special work. This is usually accomplished by means of levers operated by a ordinary brake cylinder and compressed air.

Rotary plows have their application to about the same class of roads as the snowplow, and their use is to clear tracks when snow banks have become so high that plows are not able to throw out the snow. They are more efficient at any time during a storm than a snowplow, as the snow is thrown farther back from the track. The rotary scoops are raised and lowered in the same manner as are nose plows when passing over special work.

The writer applies the term “flanger” to apparatus,

mounted between car trucks, consisting of steel plate set at an angle and used to clean out track centers to the top of the rail or lower, and to some distance outside of rails. These flangers are used to a great extent on steam roads and may be operated by any road using open rail. They are raised and lowered by air over special work. Painted signboards are usually placed beside tracks to indicate guard rails and special work as a guide to the flanger operator.

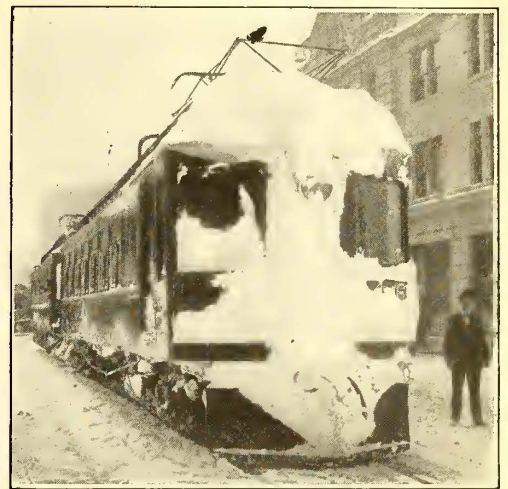
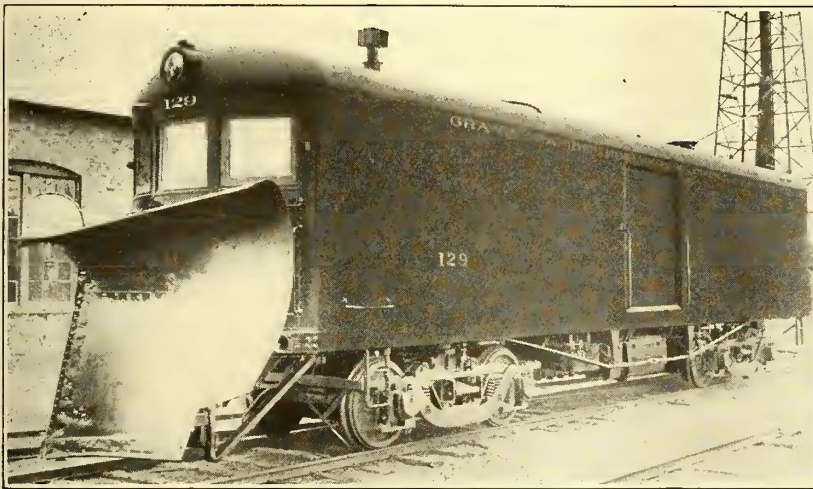
ALL EQUIPMENT MUST BE USED EFFECTIVELY

Railway operators, as a rule, do not desire to purchase any car equipment which can be used to advantage only a few months of the year. This is probably the reason why so few snow equipments are kept on hand for emergencies. But snow-fighting cars are now built which should rule out this objection. Snow sweepers and nose plows are so constructed that the brooms and plows can be removed when they are not needed and

on the right-of-way could be eliminated to a great extent if snow fences were used at points especially favorable to the formation of drifts.

HIGH TRACK CENTERS ARE HARD ON EQUIPMENT

Most railway operators agree that the greater part of serious trouble in connection with snow is the occurrence of high track centers on which the motors drag. As a result cars are derailed, motors are "roasted," the wheels are permitted to spin and service is tied up. Next in line are delays and equipment burnouts due to bucking deep snow and snowdrifts. With proper use of the equipments mentioned in this article, service can be maintained satisfactorily but, as there is no such thing as a standard snowstorm, equipments must be used as conditions require. A heavy fall of snow with no wind can usually be combated by frequent service over the lines with snow equipments, but a light snow with strong wind will sometimes drift so rapidly



EXPRESS CAR FITTED WITH SNOWPLOW, GRAND RAPIDS, HOLLAND & CHICAGO RAILWAY—SPOKANE & INLAND EMPIRE TRAIN WITH SHEATHED PILOT ACTING AS SNOWPLOW

the cars can be used for freight or work-train service until they are again required for snow work. On rotary plows and snow sweepers, where this practice would not be feasible, the cars can be placed on blocks when not needed, and the trucks and motors can be used as "spares" during the overhauling period in the summer to prevent keeping revenue cars out of service for long periods.

For city properties, snow sweepers and scrapers are usually sufficient to take care of snow, but in some localities snowplows and even rotary plows are needed also. On the average interurban property the most efficient car for all-round snow fighting, and one which could be used for other purposes during the non-winter months, would seem to be one equipped with a nose plow at each end of the car, a flanger between the trucks, wings at the sides, air compressor and electrical apparatus inside the car. It should be so arranged that plows and flanger could be readily removed when not needed, then an air compressor and the electrical apparatus could be placed under the car and it would be available for freight and work-train service. Roads having very heavy snowfalls every winter, or bad drift conditions to meet, should also have rotary plows at hand. Bad drifts

that a few minutes after the snow equipments have gone through, the tracks will be completely filled in again. In the latter case it is certainly good practice to have the snow equipment car run directly ahead of passenger cars even if this involves a reduction in the number of passenger cars run. Nothing is gained by bucking through snow with a passenger car not equipped for this work unless it is the satisfaction of "getting her through." If this policy is followed a few cars may get through and a sort of service may be maintained during the storm, but so many equipments will fail in getting these few cars through that service will be impaired for days or weeks while the equipment is being put back into shops. The loss of this car service added to the motor repair bill will total a sum unpleasant to contemplate.

There are occasional cases in which carloads of passengers might be stalled out in the country on interurban roads. Where suffering might result from exposure and under such conditions it is certainly necessary to buck through and get in if at all possible. If good judgment is used and equipments are allowed to "rest" and cool down after strenuous efforts made to get through they may not be affected to any great extent.

However, under any conditions, it is folly to burn out all of the motors when it can be plainly seen that car has not the power to get through.

Snow equipment cars and trucks should be strongly built and equipped with the best motors obtainable, large enough to have sufficient reserve to take care of the heavy duty required of them. It is common but faulty practice with some operators to use on their snow-fighting cars obsolete and run-down motor equipments which cannot be depended on in passenger service. Usually these fail just when they are needed most. The purpose of snow equipments is defeated by this practice.

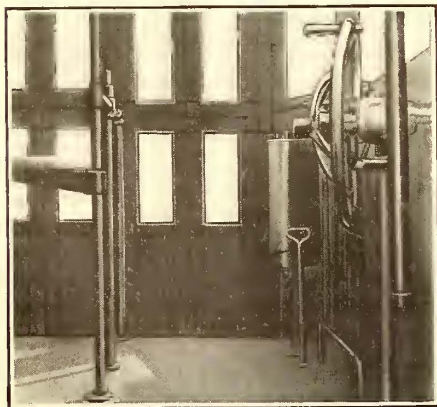
Large numbers of motors fail when operating through snow, due to snow which gets into the motors and melts, causing flashovers and insulation break-downs. Most failures of this kind could be avoided if tracks were kept free of snow, but in addition during snow periods motors should be given extra attention, drain holes should be kept open and interiors should be cleaned of snow at frequent intervals.

Service is all the electric railway has for sale. Clear tracks and cars in good condition are necessary to furnish good service. It is sound business policy to insure against loss. Why not insure service by providing necessary snow-fighting equipment?

Hand-Operated Switch Provides Connections for Emergency Braking

Motors Are Connected So As To Produce Retarding Effect By Means of a Safety Switch Which Can Be Operated At All Times

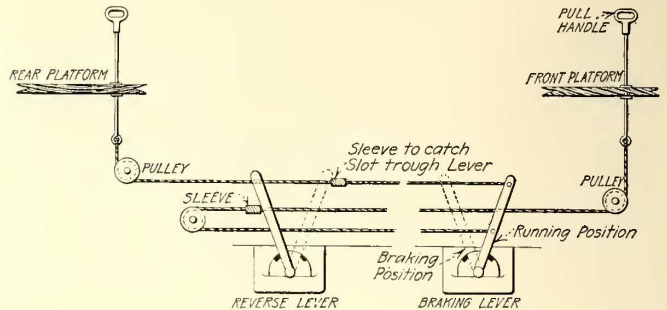
THREE of the two-motor passenger cars of the Seattle Municipal Railway, which operate over the steep grades of the Lake Burien Line, have been equipped with an emergency braking device adapted by the master mechanic to suit local conditions. The device is designed to afford protection when the power fails or the trolley is off the wire, and it provides an emergency



LEVER ON PLATFORM FOR OPERATING EMERGENCY BRAKING SWITCH

brake independent of air pressure or any brake rigging. The apparatus as installed consists of a drum-type switch which throws the two motors of the car in parallel, at the same time interchanging the motor fields. With these connections made when the car is coast-

ing one of these handles on the car platform and the cable connection for operation. In addition to applying the brake the pulling up of this handle also throws the reverser which ordinarily is only operated when power is on the car by throwing the reverse lever on the master controller. To accomplish this operation automatically the attachment as illustrated has been added to the type "HL" control equipment supplied by



CONNECTIONS TO LEVERS OPERATING REVERSE AND BRAKING SWITCHES

the manufacturer. Two sleeves are attached to the cables connecting the operating handles. These sleeves engage the reverse and hold levers. This insures the reverse lever being thrown to the proper position at the same time as the emergency switch is operated, and without danger of incorrect operation. When the switches underneath the car have once been thrown, it is necessary to reset them by hand before the car can be started after having made the stop. The operating handles on the platforms are so located as to make it inconvenient for passengers to operate the switches through curiosity.

The electrical connections also provide for backward braking should the car start to run backward down a hill with the power off. Should the brakes fail in such a case the conductor pulls the emergency lever on the rear platform and the necessary connections are thus established through the emergency braking device. While the car is running forward emergency braking is obtained by the motorman pulling the emergency lever on the front platform of the car.

With this arrangement it is unnecessary for the safety switch operator to reason out which way the reverse lever must be thrown before operating the braking switch, as the single operation throws the reverser and the braking switch at the same time. This braking device has a total weight of only 125 lb. and was installed without necessitating any change in the controller connections. The equipment has now been in service more than two years and is considered a desirable factor to the safe operation of the equipment over the heavy grades on this line.

The device was installed under the direction of the department of public utilities of the City of Seattle.

The National Safety Council, 208 South La Salle Street, Chicago, Ill., has offered prizes of \$25, \$15 and \$10 respectively for the best suggestions for a Christmas safety bulletin, bringing out the spirit of Christmas and of safety. The contest closes on Nov. 23, necessitating prompt action on the part of contestants.

50-Ton Electric Locomotives for Canada

Details of the Special Features of the Twelve Electric Locomotives Being Built for the Hydro-Electric Power Commission of Ontario

TWELVE 50-ton electric locomotives are being built by the National Steel Car Company, Ltd., Hamilton, Canada, for the Hydro-Electric Power Commission of Ontario. They will be used for hauling trains on the construction railway which is being built in connection with the power development at Chippewa Creek near Niagara Falls. Operation will be at 600 volts, direct current.

One of the completed locomotives is shown in the accompanying photograph. They are designed for double-end operation, with general dimensions as follows:

Length over all.....	35 ft.
Truck centers.....	19 ft.
Length of main cab.....	10 ft.
Length of auxiliary cab.....	9 ft. 6 in.
Width over side sills.....	9 ft.
Height from rail to top of floor.....	4 ft. 6½ in.
Height from rail to top of cab roof.....	12 ft.

DETAILS OF CONSTRUCTION

The underframe is made up of I-beams and channels. The center, side and intermediate sills are 12-in. I-beams running continuous from end sill to end sill to which they are secured by connection angles. The end sills are 12-in. channels extending straight for 15 in. on each side of the center line and dropping back 13 in. to the corner of the underframe. Cross-ties, of which there are five, consist of 8-in. I-beams connected to the longitudinal sills by angle connections. The bolster is composed of 14-in. x 1-in. plates riveted to the top and bottom of the longitudinal sills. The flooring, except in the cab, consists of cast-iron blocks 2½ in. thick with checkered surface.

The draft gear is of the Miner twin spring type with M.C.B., class "G" spring and keyed-yoke connection to the M.C.B. coupler.

The cab is of all-steel construction, except the roof, which is made of poplar tongued and grooved and covered with 8-oz. cotton duck. The side and end posts are 3-in. channels while the corner posts are 3½ in. x 3½ in. x ¾ in. angles. The outside sheathing is No. 16 gage sheet steel, and is lined inside with wood lining. Each side of the cab is provided with two drop-sash windows and one swing door. Each end is provided with two stationary windows, one drop sash window and one swing door. The doors are in diagonal corners as are also the drop-sash windows. All control levers and handles are duplicated in diagonal corners for reversible operation.

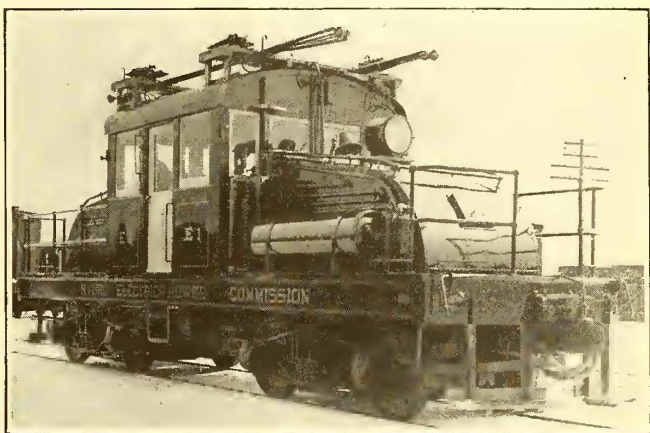
The hood at each end of the cab is of all-steel construction and is composed of angles, channels and No. 16 gage sheet steel. Inside the hood are the air compressor, large sand box, air-operated sanding device, and electrical equipment and a removable steel door is provided for easy access. The hood is narrow enough to allow a walkway around the outside of the platform. A pipe railing is provided at the outside edge with a hand railing around the top of the hood.

Trucks are of the arch bar design, with inside-hung

brakes, 5½-in. x 10 in. journals and 36-in. diameter wheels. Each truck bolster is composed of two 10-in., 40-lb. rolled I-beams supported by helical springs. Each truck is provided with two inside hung 125-hp. motors suspended from brackets secured to channel transoms.

SPECIAL AIR EQUIPMENT TO OPERATE DUMP CARS

The locomotives are being equipped with Westinghouse air brakes, with 14-in. x 12-in. type "S" cylinders, the main reservoirs, parasite reservoir and radiating pipes being located on the top of the floor at the side of the hood. Two D-4-P, 50-ft. Westinghouse motor-driven compressors will furnish sufficient capacity to supply air to the dumping mechanism on twelve 20-yd. dump cars, and the parasite governors are provided and so arranged that when operated in trains all governors will cut in at the lowest setting pressure in the series, and will prevent the dumping apparatus



ONE OF TWELVE 50-TON ELECTRIC LOCOMOTIVES FOR CANADIAN COMMISSION

from depleting the pressure available for braking below a safe predetermined minimum. The hand-brake equipment is operated from inside the cab by a vertical hand wheel connected by bevel gears to a shaft running through the cab floor.

The locomotives will be equipped with multiple-unit control, six having General Electric control and six Westinghouse control. Each locomotive will develop at starting a tractive effort of approximately 30,000 lb. on dry rails.

Development of the Turbine Since 1899

In a recent review of steam turbine progress the Westinghouse Electric & Manufacturing Company gives data regarding the average kilowatt capacity of turbines, and the capacity of the largest turbine shipped each year. Under the first head, beginning with 1899, when the average capacity was 500 kw., the figure rose to about 1800 kw. the next year, fell to below 500 kw. the following year and has since been consistently tending upward, reaching a maximum of 25,000 kw. in 1914. It fell to 12,000 kw. in 1916 and rose again to about 30,000 kw. in 1917.

Japanese manufacturers of electrical apparatus are planning to show their independence of Germany as a source of electric locomotives. Four locomotives are to be built for the Usui electrification as a start.

Saving \$3,000 Per Year in Coal Handling

St. Joseph Company Installs Coal-Handling Equipment and Increases Storage Capacity from 250 to 10,000 Tons

AS A PART of the program of remodeling the power plant of the St. Joseph Railway, Light, Heat & Power Company, St. Joseph, Mo., a complete coal-handling equipment was placed in operation last fall. Prior to that time all coal was handled by hand from the cars direct to the plant from a spur track of but



FIG. 1—CRANE AT WORK TRANSFERRING COAL FROM CARS TO CRUSHER.

two cars capacity to a storage bin having a capacity of only a few hours supply.

At present the coal is delivered by the Chicago, Burlington & Quincy Railroad to a spur track of ten cars capacity. This track lies immediately adjacent to a large storage space, through the center of which operates a 20-ton locomotive crane built by Orton & Steinbrenner, Chicago. The crane unloads the coal from the cars direct to a 30-ton Williams swing-hammer coal crusher, as shown in Fig. 1. From the crusher the coal is delivered to a 16-in. inclined-belt conveyor, which in turn deposits it upon a 16-in. horizontal-belt conveyor of 118-ft. span across the Burlington tracks.



FIG. 2—COAL CONVEYOR EQUIPMENT WHICH WILL HANDLE 80 TONS OF COAL PER HOUR.

The conveyor, designed to handle 40 tons per hour, delivers the coal to a bunker of fifteen hours supply capacity within the power house. Chain buckets elevate the coal to a longitudinal hopper from which it is fed to the chain grates by means of a screw conveyor.

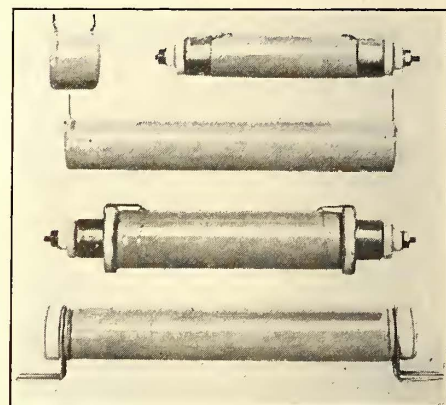
When more coal is at hand than is needed for immediate use in the plant it is unloaded by the crane to the storage space, which has a capacity of 10,000 tons. No expensive elevated structure or walls have been

built, the coal being piled on ground leased from the Burlington Railroad. Additional space is available to increase the storage capacity to 40,000 tons.

The total cost of this coal-storage and handling plant, including crane and all equipment, was approximately \$40,000, and it is estimated that a saving of \$3,000 per year is obtained as compared with the old method of handling fuel. Storage of coal to the full capacity last winter permitted the plant to run without interruption during a period when less fortunate neighbors were without fuel. A second horizontal conveyor of equal capacity is already in place, as indicated in Fig. 2, and in operation.

Enameled Resistor Units for Current Regulation

SEVERAL types of enameled resistor units have been developed by the General Electric Company of Schenectady, N. Y. Some of the applications to which these units have been put are railway and fire alarm signals, fractional horsepower motors, and electric locomotive headlights. They are also used extensively in series with relay, contactor and circuit-breaker coils and can be used in places where there is much dampness and moisture. These units withstand unusually high temperatures as well as sudden changes in temperature. The resistance wire or conductor is wound either upon a steel body coated with a special refractory enamel or upon a high heat-resisting silicate compound developed to withstand sudden extreme temperature changes without cracking or weakening. The steel body is preferred for extreme lengths where strength for a long span is required and is especially serviceable where the unit might be subjected to severe vibration or shock. The refractory silicate body is used for most of the ordinary types of resistance. The compound employed is certain to be superior to porcelain or other ceramic products, which are easily cracked or weakened mechanically by repeated and extreme temperature fluctuations.



TYPES OF ENAMELED RESISTOR UNITS

After being wound upon the proper body the conductor is embedded in a blue vitreous enamel and is fused, until it has a uniform glossy structure, at a temperature of about 1000 deg. C. This enamel is moisture and heat resisting and forms a mechanically strong casing for the conductor. Enamels of the type used are extremely durable and maintain their dielectric strength and mechanical properties indefinitely.

Several different methods of attachment to the circuit have been developed as shown in the accompanying illustration. A variety of units of various sizes and ohmic capacities have been standardized and units of a special nature are obtainable.

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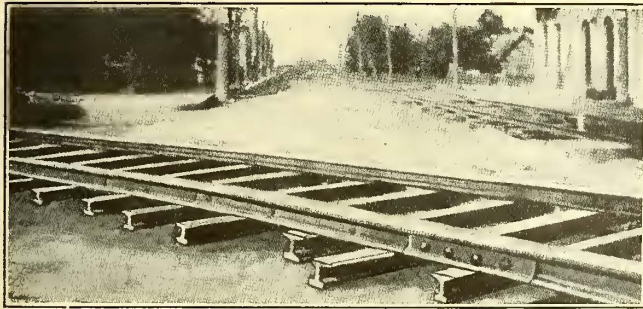
Old Rails for Ties

This Construction Permitted the Use of a Lighter Running Rail and Afforded a Successful Means of Anchoring in Concrete

IN A RECENT issue of the *Concrete Highway Magazine* a description is given of an installation of track with which old rails were used instead of ties. The Helena Light & Railway Company made use of this construction, due to inability to procure a rail 6 in. high. The use of a 4½-in. rail which the company was able to obtain would not permit more than 2¾ in. of concrete over the ties under the flangeway, and it was not considered that this thickness of concrete was sufficient. The company had on hand a considerable quantity of worn-out 45-lb. T-rails and these were cut in lengths of 6 ft. and 7 ft., and electrically welded to the track rails.

At turnouts the ties were cut long enough so that at the heel of the switch and at the frog they could be welded to all four rails. Back of the frog for 5 ft. or 6 ft. the ties were extended to reach one rail of the other track, a very rigid construction being secured in this manner.

It was found that the track built as above described could not be lined nor could superelevation be given after the ties were welded. The specifications for concrete pavements required a thickness of 6 in. at gutter and 8 in. at the center of the street. The depth of



VIEW OF TRACK IN HELENA, MONT., WITH RAILS USED AS TIES

the track as built was 8½ in. A depth of 5¾ in. of concrete was obtained under the steel ties, which was considered sufficient.

The results of this construction were so successful that when Helena Avenue was paved, a year later, the same type of construction was adopted with but two exceptions. The first of these was the omission of reinforcements which were previously specified and, second, the introduction of a longitudinal joint 3 in. beyond the end of the ties, the idea being to make the track construction independent of the street pavement. Instead of building the track section ahead of the sides which were to be paved, thus obtaining a straight joint, the pavement was laid full width and, when the concrete was struck off with a template, the joint filler was allowed to fall out of line.

Joints should be staggered, as the ties act as cross bands and staggering tends to prevent cracks in the pavement.

The heaviest cars operated over this line weigh 18 tons.

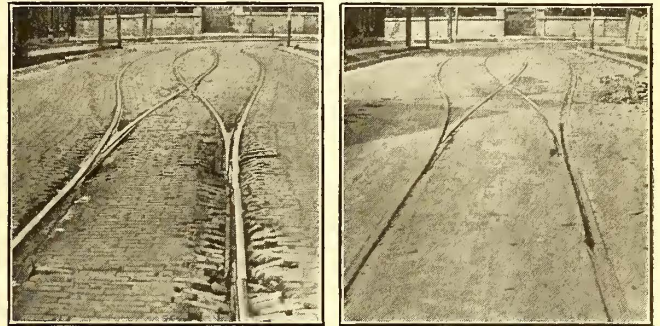
This method of construction was carried out at the following costs:

Salvage of 7 ft. of 45-lb. rail at 1 cent per lb.....	\$1.05
Labor, cutting.....	0.05
Labor, welding.....	0.29
Total cost per tie.....	\$1.39

An Effective Rail-Joint Booster

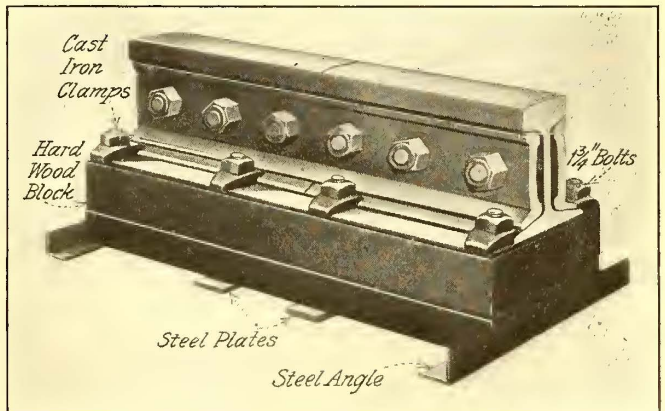
A DEVICE used to rehabilitate track in which low joints have developed and known as the "Dayton Rail-Joint Booster," was recently placed on the market by the Dayton (Ohio) Mechanical Tie Company.

The joint booster is an adaptation of the Dayton mechanical tie described in the *ELECTRIC RAILWAY JOUR-*



SECTION OF TRACK BEFORE AND AFTER HAVING RAIL-JOINT BOOSTER INSTALLED

NAL of Sept. 1, 1917 and Jan. 19, 1918. It consists of a white oak block, 24 in. long, 10 in. wide and 5 in. high. This block is imbedded in angles and supported by a ½-in. bed of asphalt, which serves as a shock absorbing cushion in the same way that it does in the mechanical tie. Covering the entire top of this block is a ½-in. steel plate, on which the rail rests. Eight bolts with rail-clip heads pass through the plate and block and are



THE "RAIL-JOINT BOOSTER"

anchored at the bottom in angles and metal straps, which in turn extend beyond the block and provide a means for anchoring the joint booster into the concrete superstructure. With the joint booster, low joints are repaired and the rail ends brought to surface quickly, with comparatively small cost, and without in any way interrupting car operation.

The pavement and superstructure immediately surrounding the low joint which is to be repaired, and to a depth of 13 in. or 14 in. below the rail base, is removed, the old joint tie is cut in two, and the part sup-

porting the rail at the joint is taken out and replaced by the joint booster. The booster is clamped in place on the rail base and welded its full length to the rail, assuring an efficient current return. The rail is jacked up until the base is at its original level and the trench beneath the booster is then filled with moist concrete. After this concrete has been thoroughly tamped and re-tamped under the booster, the trench is left open for a few hours to enable the passing cars further to pack it. The old angle bars are welded to the rail and the bolts are spot welded. If the low joint is so bad that in bringing it to surface the contiguous ties are affected, the necessary shim blocks are inserted under the rail at these points. After the trench is refilled and the pavement repaired, the cupped ends of the rails are built up and ground to surface by means of any of the well-known processes now in general use.

The joint booster now is used extensively in rehabilitating track in the paved streets of Dayton, Ohio. Besides the utility of the process of doing the rebuilding without "killing" the track undergoing repair, the low cost of the material used, the small labor cost for doing the work and the utilization of the old rail are highly desirable under present labor and material shortages.

Air-Brake Hose Mounting and Clamping Machines

SOME time ago the Westinghouse Air Brake Company designed and developed two types of air-operated machines for mounting and clamping the fittings into air-brake hose. These machines were originally developed in the company's Wilmerding factory. While the company has not heretofore attempted to manufacture these devices for outside use they have felt that many roads could make efficient use of such machines and have recently arranged so that they can now be procured on order either as complete outfits or in parts which cannot be readily obtained or manufactured from exist-

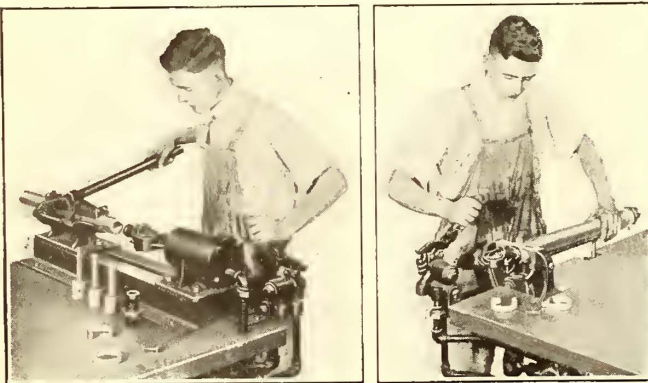
which is mounted a hand-operated clamp and a compressed air-cylinder as shown in the accompanying illustration. The hand-operated clamp is designed to grip the hose throughout the greater part of its length and hold it rigidly while the coupling or nipple is being inserted. The compressed air cylinder is provided with a piston and rod for driving the fitting into the hose. The piston rod of the cylinder is adapted to the special head used for mounting both the coupling and the nipple. These heads are removable so that both nipple and coupling can be mounted on a single machine, although not at the same time. An operating valve for controlling the admission and exhaust of the air from the cylinder and accessories completes the machine.

The second machine is for fastening the clamps around the ends of the hose after the couplings or nipples have been inserted. This machine consists of two hardened steel jaws one of which is movable and is operated by a compressed air cylinder, piston and rod. A tension spring is attached to the lower end of the movable jaw so that the jaws will open automatically when the air pressure is released. An adjustable support is provided for the various sizes of hose used. This can be raised or lowered to suit larger and smaller hose sizes. After the coupling and nipple have been applied by the machine previously described the hose is laid on the support and the clamp placed in position by hand. By moving the operating valve handle to application position air is admitted to the compressed air cylinder which forces out the piston and rod and causes the jaws to close. These jaws grip the clamp just back of the shoulder and close in so as to hold the clamp tight while the bolt is applied and the nut run up on the bolt until it comes firmly into contact with the lug on the clamp. Pressure is released by moving the operating valve to release position. The air pressure used in both the mounting and clamping machines is 70 to 80 lb.

Safety-First Switching Cabinet

A STEEL switching cabinet arranged so as to prevent admittance to the live-current-carrying parts, except when power is off, has been placed on the market by the General Electric Company.

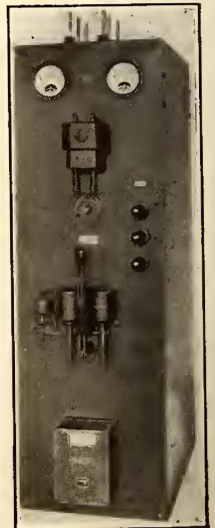
The main switching apparatus consists of a disconnecting switch operated by means of a special handle or wrench from the front of the panel. This is so interlocked that the rear door cannot be opened while the switch is closed, nor can the switch be closed while the door is open. This makes it impossible for anyone to gain admittance to the compartment while the current-carrying parts are alive. The cabinet consists primarily of instrument transformers, oil circuit breakers and disconnecting switches, inclosed in a sheet-steel compartment with instruments, operating levers, etc., mounted on the front. It is furnished in capacities up to 300 amp. at 15,000 volts, and 800 amp. at 600 volts.



AIR-OPERATED MACHINES FOR FORCING COUPLING HEADS AND NIPPLES INTO AIR HOSE AND CLAMPING ENDS

ing railway material. Most repair shops could build their own machines by buying a few of the specially designed parts. These can be either obtained from the Westinghouse Air Brake Company or they may be made to blueprints which the Air Brake Company will be pleased to furnish on request.

These devices consist essentially of two different machines, the first is used for mounting the coupling and nipple in the hose itself. This consists of a frame on



SAFETY-FIRST SWITCHING CABINET

LETTERS TO THE EDITORS

New Zone Collection System Proposed

40 WALL STREET, NEW YORK, NOV. 4, 1918.

To the Editors:

The current difficulties of the electric traction companies, due to great increases of wages, have made it absolutely essential that revenues shall be increased. The increase in revenues from increases in rate of fare in no case corresponds to expectations. Apparently, the zoning system offers the greatest possibilities of increased revenue, but the difficulties are serious, particularly the difficulty of devising a simple method of collecting fares—one which shall at the same time make theft difficult.

For a particular situation, I have suggested the following solution: Divide the city into two zones, an inner and an outer, the boundaries being fixed by the best available data to produce the requisite revenues. Charge a 5-cent fare within each of the zones, and two 5-cent fares from one zone into the other. All passengers entering in the first zone, whether outbound or inbound, shall pay on entering: passengers leaving in the first zone do not pay. All passengers leaving in the second zone pay 5 cents: passengers entering the second zone do not pay.

A moment's consideration will show that for either outbound or inbound trip, a passenger crossing the boundary line pays 10 cents, and one riding within a single zone only 5 cents. The fare box could be divided into two parts, one for entering passengers, the other for leaving passengers; hence, data are automatically collected, showing the division of riders and providing the information necessary to change the zone boundaries so as to produce adequate revenues.

This system would seem to apply fairly well to cities in which the lines all radiate from a focus. The application is not so simple in cities of other conformations, but variations of this plan will readily suggest themselves, as, for instance, dividing a particular route into two parts, and collecting as above from entering or leaving passengers.

This maintains the traditional 5-cent fare and offers easy means of collection. In some cases it may work well, but it is not offered as a panacea.

CARY T. HUTCHINSON,
Consulting Engineer.

The Curse of Expediency

THE SOUTHWESTERN ELECTRICAL & GAS ASSOCIATION
DALLAS, TEX., NOV. 2, 1918.

To the Editors:

During the last month I have been analyzing the latest list of electric railway fare increases, and I have about come to the conclusion that the troubles of the industry in this regard are due to the lack of co-operation among owners and operators, and to that constant curse of the last twenty years—"expediency"!

The greatest mistake seems to have been the attempt to obtain an increase of net revenue by a 6-cent fare. In the first place, the apparent increase asked—20

per cent—is not commensurable with what electric railways have been announcing as their loss. Various statements of increased operating expenses, which have been published within the last year or so, run anywhere from 75 per cent to 120 per cent for the total of increases. If the railways had, on the basis of their given figures of increased operating expenses, asked something like a proportionate increase in fare, the matter would have been in a shape which the public could understand and appreciate. But with a 6-cent fare the stated increase of operating expenses and the asked increase of fare were so ridiculously out of proportion that the public was likely to suspect one or the other of the ratios was incorrect.

If a straight single fare for any distance was to be continued, the demand should have been for 7 cents with a possible sale of fifteen tickets for \$1. This would have been more equitably proportional to the stated increase in operating expenses, and the public could then have believed that with this 40 per cent to 50 per cent actual increase of fare the companies could still exist and make a small amount of profit.

The most equitable system, of course, would be a zone system or a zone system with a charge for transfers. The effect of the zone system as regards both fare collection and the influence upon city growth has been greatly exaggerated and has been a bugbear without cause. By an easily obtained traffic survey a single arbitrary zone line—or even a second zone line—could be arranged without injustice or inequity to the traveling public. Such a system would equalize to a great extent the riding cost to the general public, add greatly to income and allow the retention of the 6-cent fare for the short rider. If the electric railway system or the layout of the city was such as to cause great use of transfers without a corresponding increase of gross earnings, a small charge of 1 cent for all transfers or for certain transfers would add to the gross earnings without mulcting any portion of the public for service not rendered to that portion.

Unquestionably, the straight fare for unlimited riding is absolutely dishonest, and the fact that the companies have for so long a time agreed to it does not alter the case. Furthermore, the plea that the straight nickel fare has tended to build up city suburbs has about lost its urgency in America. There is no large city in America that has not slums which no single fare for any distance will eliminate. Those who have benefited most from the straight nickel fare have been suburban real-estate promoters and those groundhogs who hold vacant lots or lots with "taxpayers."

The straight 6-cent or even the straight 7-cent fare does not diminish either of these evils, although the straight 7-cent fare does better substantiate the general cry of from 75 per cent to 100 per cent increase of operating expenses. But a straight 6-cent fare—even a straight 5-cent fare—for the short rider, with a zone or two at a 1-cent rate, and a "cut rate" for quantity sale of tickets or tokens, would be the first step toward equity to the traveling public. It would convince them that our cry of "increased operating expenses and diminished or vanished net profits" is not a cry of "wolf!"

The straight fare of "a nickel-plus-a-penny" or even "plus-two-pennies" is certainly a tactical mistake, and,

like all such mistakes, its effects are not confined to the particular property concerned. No utility ever made a commercial or tactical mistake which at some time and in some way did not react on itself and on other and perhaps far distant utilities. The utility which, in these crucial times, makes an uncommercial and inequitable arrangement in regard to compensation for its product or its services not only creates an evil precedent for itself but opens up evil consequences.

Many of these fare changes have been glossed over by both utilities and controlling bodies as being effective "only until peace times." Such an excuse is no excuse at all; either the matter is presently equitable or it is not. "Peace conditions" cannot be, for many years, identical with the general conditions before the war. The time of readjustment after peace will be an exceedingly long one. Therefore, to settle so important a matter as the adequate return on public utility investment by a temporary and inequitable expedient for an uncertain period in the future is not "good business" for either party.

"Local conditions" cut a large figure in the costs of operation, and certain properties can make a profit on a fare at which other properties would starve. This, however, is no excuse for making the basis of fare one that is not commercially just and equitable to all parties concerned. Nor is it any reason for that excuse of the weak-kneed "expediency." It seems a pity, when the present rare opportunity is offered, that the basis of fare has not been made more of a matter of co-operative standardization by the electric railways themselves and that a standard has not been set on an equitable basis.

H. S. COOPER, Secretary.

He Prefers the Car with End Doors

NEW YORK, Oct. 29, 1918.

To the Editors:

I have read with a great deal of interest your description of "The First Universal Car" and your editorial on the War Board's action in securing a design of an all-round standardized car for general city service. I note, however, that the recommendation of the board was for the center-door type, whereas the majority of operators in medium-sized cities (which include the vast majority of all the properties in this country) prefer the end-door type, except where train operation is necessary, where the side-door car has certain advantages. But as train operation is limited to a comparatively few cities in this country and these few are mostly cities of the largest size, would it not seem logical, if a "Universal" car is to be secured, to adopt the general design which has proved most satisfactory in the greatest number of cities?

The end-door car, as described in your paper for single-car operation, would weigh less than 30,000 lb. when equipped with 25-hp. motors, which should be amply large for such a weight. This is 1000 lb. less than the center-door car, and it would have more adequate openings for the entrance and egress of passengers and be satisfactory in every other respect.

It occurs to me that the center-door car should only be considered where train operation is a necessity and should be made the exception rather than the standard for this reason.

TRANSPORTATION ENGINEER.

AMERICAN ASSOCIATION NEWS

Association Explains M. O. Resolution

PRESIDENT PARDEE of the American Electric Railway Association has issued a statement to the member companies explaining that many of the daily newspapers, in their report of the Nov. 1 conference said that the resolution favoring municipal ownership and offered by Mr. Mortimer was adopted. The statement says that this is not the case but that the resolution, on Mr. Mortimer's motion, was referred to the executive committee of the association and so far no action has been taken on it. Mr. Pardee's letter also refers to the resolution introduced at the conference by Mr. Gadsden and incloses a copy of it.

Mr. Gadsden Chairman of War Board

THOMAS N. McCARTER has resigned as chairman and also as a member of the American Electric Railway War Board. To the first position President Pardee of the American Electric Railway Association has appointed P. H. Gadsden, who has been resident director of the board, and to fill Mr. McCarter's place as a member he has appointed Henry G. Bradlee of Boston.

Bulletin on Labor Awards

THE American Electric Railway War Board has issued Bulletin No. 38, giving a brief review of the awards of the War Labor Board in ten electric railway cases handed down on Oct. 24.

M. J. Feron President Chicago Section

AT THE MEETING of company section No. 6, held on Nov. 5, M. J. Feron was elected president; L. C. Almy, vice-president; P. V. Lyon, secretary-treasurer; G. H. Pierce, librarian, and F. H. Bockman, director for a two-year term.

The feature of the meeting was a comprehensive talk, by Charles H. Jones, assistant electrical engineer, on the history and principles of operation of the automatic substation. Mr. Jones made effective use of lantern slides in illustrating his lecture. In addition to the formal part of the program there was banjo and piano music by performers from the Western Electric Company. Patriotic music was sung also, light refreshments were served and a general sociable spirit prevailed. The attendance was about one hundred members and guests.

General Association Notes

THE vacancy in the secretary-treasurership of the American Electric Railway Claims Association has been filled for the time being by the appointment of Miss Carrie A. Schwartz, Columbus Railway, Power & Light Company, Columbus, Ohio, as temporary secretary. This vacancy was caused by the death of B. B. Davis.

Frank Davis, Public Service Railway, Newark, N. J., has been elected secretary of the American Electric Railway Accountants' Association to succeed S. C. Rogers, resigned.

News of the Electric Railways

FINANCIAL AND CORPORATE • TRAFFIC AND TRANSPORTATION

PERSONAL MENTION

Election Results

Candidates Drag the Electric Railways into Politics by Making Fare Increases an Issue

Election results of Nov. 5 are regarded as having a bearing on the electric railways in the States of New York, New Jersey, Massachusetts and Rhode Island and in the cities of New York, Chicago and Seattle, to mention only some of the cases.

In New York State it seems that Mr. Smith, democrat, has been elected Governor over Mr. Whitman, the present incumbent. Mr. Smith regards the Public Service Commissions of the Empire State as failures. He also came out for municipal ownership. Mr. Smith will have a republican Legislature back of him, however. The accident on the Brooklyn Rapid Transit System, to which reference is made elsewhere in this issue, was seized upon by the backers of Mr. Smith for political capital, and they proclaimed that all the men "who have made our Public Service Commission merely a political machine" should be turned out. In this campaign Merton E. Lewis, attorney general of the State, and a republican, was quoted to the effect that "the chief object of its (Public Service Commission) members appears to be to promote Governor Whitman's political aspirations."

Both the Public Service Railway and the Trenton & Mercer County Traction Corporation fare increases were dragged into the New Jersey campaign. The regulatory commission there was named largely by Governor Edge, a candidate for Senator. The incus for the fare increases on the lines mentioned was put upon the War Labor Board, which raised wages and is a federal administration creation, or upon Governor Edge, depending upon whether the candidate happened to be a democrat or a republican. There was no election for Governor in New Jersey. Both Governor Edge and Mr. Baird, republicans, were elected to the United States Senate. The new State Assembly in New Jersey will consist, according to early returns, of thirty-one republicans and twenty-nine democrats, a Democratic gain of fifteen. The complexion of the Senate remains unchanged. It will consist of fifteen republicans and six democrats.

In Massachusetts an effort to create a political issue out of recent electric railway fare increases failed utterly to interest the voters, and Richard H. Long, democratic candidate for the Governorship, was defeated by Lieutenant-Governor Calvin Coolidge, the republican nominee, by more than 9000

plurality. To the representative of the ELECTRIC RAILWAY JOURNAL in Boston Governor-Elect Coolidge said on Nov. 6 that the refusal of the electorate to regard the electric railway fare situation as an issue in this campaign may be taken as an indorsement of the policy of the State to keep such questions out of politics. He said: "The time has come when the public is sensible of the fact that transportation and other services cannot be furnished indefinitely at a cost below fair wages and other expenses including a fair return upon the legitimate investment which Massachusetts has always approved when issued. The efforts of the democratic candidate to raise a dust-cloud of misunderstanding based upon an assertion that Massachusetts electric railways stand in need of an investigation of their capitalization fell flat in the face of the well-known record of the Bay State regulation of such properties. Every dollar of capital issued by our electric railways is necessarily authorized by the Public Service Commission after careful investigation, and the work of this board is too well known in this field to require any extended demonstration.

"The defeat of Senator Weeks, however, is to be regretted. Although no public utility issue was directly involved in his candidacy for re-election, his retirement withdraws from the upper house of Congress one of its most able and useful members, whose record as a business man and statesman should have returned him to Washington in this vital period in the country's history."

In Rhode Island the democrats blamed the republicans for the fare increases on the lines of the Rhode Island Company, Providence. On the other hand Governor Beekman, republican, who has been re-elected, declared that he was in favor of public control of the electric railways. The entire republican State ticket is reported to have been elected there.

In Chicago the franchise settlement ordinance was defeated. Reference to this vote is made elsewhere in this issue.

In Seattle the question of municipal ownership came up informally. Negotiations have been going on for the purchase of the railway lines of the Puget Sound Traction, Light & Power Company by the city. Arrangements were made for an "advisory election" to ascertain the sentiment of the people toward the proposal. By a vote of 26,701 to 7714 the electors favored the purchase, and immediate steps are promised for taking over the lines from the private company.

Staggered Hours Win Favor

New York Public Service Commission, Health Department and Merchants' Association All Favor Plan

With each day showing a more striking decrease in the number of new influenza cases and in the number of deaths from influenza and pneumonia in New York City the Department of Health announced on Nov. 2 that there would be no necessity for enforcing the emergency opening and closing order after Nov. 5. The department accordingly announced that so far as it was concerned manufacturing establishments, stores, offices, theaters, etc., could resume the hours which they observed before the Board of Health order went into effect. In this connection, Dr. Copeland, head of the department, made a statement in part as follows:

HEALTH DEPARTMENT HEAD SPEAKS

"I cannot let this opportunity pass without saying once again how earnestly I hope that a permanent arrangement along these lines (staggered hours) will be effected. Letters and personal messages received at this office since the emergency plan went into effect have convinced me that employers and employees, merchants, manufacturers, tradesmen, theatrical managers and the leading representatives of almost every class of trade and industry will co-operate gladly in any movement designed to arrange such a system. Officers of transportation companies have assured me that they believe such an arrangement would prove to be the solution of the peak problem.

"It seems to me that the theatrical managers of the city might well work out some co-operative system that could be put into effect, without waiting for other lines of business. Their hearty co-operation in support of the present plan has resulted in a notable decrease in the crowding of after-theater cars. Their evening schedules could be worked out without regard to any other lines of business, for their hours are such that there would be no conflict. This is one group which might get speedy results through independent action.

SYSTEM MUST GO FOR PRESENT

"So many factors enter into the problem of adjusting the business hours for the whole city that of necessity it will be some time before such a final plan is ready for adoption. I should like to retain the benefits of our temporary plan until that time comes, as I am certain it will come, but I cannot justify myself in asking longer that the citizens of this city submit themselves to the inconveniences and in many cases hard-

ships which the enforcement of this order has entailed."

Charles B. Hubbell, chairman of the Public Service Commission, had announced previous to Dr. Copeland's statement that he intended to call a conference of theatrical managers, department store proprietors, manufacturers and heads of other industries, for the purpose of bringing about united action on the latter's suggestion that the present schedule of hours for opening and closing be continued.

According to C. A. Standfast, supervising inspector of the Public Service Commission, observations made since the Health Department order took effect showed a decrease of 5500 passengers on the West Side subway during the morning rush hours and of 2000 passengers during the evening rush

hours; and on the East Side subway a decrease of 3000 passengers during the morning rush hours, and a decrease of 3000 passengers during the evening rush hours. The basis for the comparison was September traffic, no allowances being made for the seasonal increase in October or the decrease due to influenza.

An officer of the Merchants' Association of New York said:

"As a general thing, I think it would be wise to work out some plan for graduating the schedule, because it certainly has reduced congestion on the subway. But I do not think it has had any noticeable effect on business. Retail business has been very light for the last three weeks anyway, due to the epidemic. People in the suburbs are not shopping or going to the theater."

Terrible Accident on Brooklyn Rapid Transit Brighton Beach Line

More Than Ninety Persons Dead—Train Left Track at Curve—Inquiry to Determine Responsibility

The most disastrous accident in the history of electric railroading in New York State, and probably in the United States, occurred on the Brooklyn Rapid Transit Lines about 6.40 p.m. on Nov. 1 when a five-car outbound Brighton Beach train jumped the track. The point at which this occurred was in a short tunnel near Malbone Street, Brooklyn, where the tracks leave the elevated structure on Flatbush Avenue and before they emerge to the surface for the rest of the run to Coney Island. There is a sharp curve descending to the entrance of this tunnel, and the train left the track presumably because of excessive speed when descending the grade on this curve. The signs which warned the motorman of the train to proceed at a slow speed were disregarded.

The train was crowded with rush-hour passengers returning from New York. When the first car of the train jumped the rails about 30 ft. north of the entrance to the tunnel, it was followed by the second and third cars, and it was among the passengers of these that the greatest number of the casualties occurred. According to figures on Nov. 6, ninety-three persons were killed and some sixty persons were still in the hospital with serious injuries.

On Nov. 4 Mayor Hylan began a magisterial inquiry in Brooklyn to determine the responsibility for the disaster. The Mayor himself conducted the inquiry. Witnesses testified that the motorman of the wrecked train, Luciano, also known as A. E. Lewis, was not a regular motorman but a crew dispatcher whose duty it was to assign conductors and guards to their trains. He had operated trains on other divisions of the company's system but not on the Brighton Beach line. He volunteered for this service, when he learned that the line was short of motormen, and was accepted by the

foreman in charge. The inquiry so far has disclosed no defects in the air-brake equipment of the train or in the track construction, but the train was behind its schedule.

The Mayor has urged the district attorney to prosecute vigorously the officials who were responsible "for placing a man without experience in charge of a train carrying hundreds of passengers." Those arrested up to Nov. 3 were the motorman Lewis, who escaped uninjured, the conductor of the train and a guard.

ACCIDENT FOLLOWS STRIKE

The accident occurred on the evening of the same day on which a strike among the motormen and motor switchmen of the rapid transit lines in Brooklyn was called by the Brotherhood of Locomotive Engineers. An inquiry into the labor situation among these men had been made by the War Labor Board, whose decision was published in full in last week's issue of this paper. Briefly, it declared that employees had the privilege of joining a union and should not be discharged for doing so, but that the company need not deal in labor matters with anyone except its own employees. It also recommended the reinstatement of twenty-nine men who, it believed, had been discharged because of their union affiliations or activities.

As stated last week in this paper, the company sent a copy of this decision to the departmental trustees who represent the motormen and switchmen on the B. R. T. Benefit Association Board, to which questions of discipline under the constitution are referred where such a hearing is requested by a discharged employee, and asked that the departmental trustees investigate carefully the facts as to the separation from employment of the men named. It added that if the trustees found that

any injustice had been done, the employee would be reinstated and allowed back pay from the time of his dismissal. This letter, which was dated Oct. 29, was sent also to all motormen and motor switchmen on the system with a copy of the decision.

The strike called by the brotherhood began early Friday morning, the reason given being that the twenty-nine men mentioned were not immediately reinstated, but accounts differ as to the number of men who went out. After the accident, the company and its striking employees agreed that the whole matter would be submitted to the Public Service Commission for settlement, the twenty-nine men were reinstated and all the men went back to work.

On Nov. 4 Public Service Commissioner Whitney criticised the Mayor for opposing or failing to approve in the past of plans which would have allowed steel cars to be substituted for wood, and for publicly abusing the company yet, while he was a judge, recommending applicants for employment. The commissioner also said that the accident was the climax to labor difficulties in which neither side acted in accordance with either the letter or the spirit of the understanding between President Wilson and the great labor leaders of the country that there would not be strikes.

Des Moines Men Must Arbitrate

The decision of the War Labor Board on Oct. 23, referred to briefly in the *ELECTRIC RAILWAY JOURNAL* of Nov. 2, page 806, probably prevented a strike of the employees of the Des Moines (Iowa) City Railway called for Oct. 25. All the men had planned to go out except those in the shop and those on the Fort Des Moines line. Not until late on Oct. 24 was word received in Des Moines from the War Labor Board that the employees must submit to arbitration in accordance with the terms of the contract between the company and the union.

Emil G. Schmidt, president of the railway, refused to become a party to the hearing before the War Labor Board on the grounds that the contract between the company and its employees which has more than a year yet to run provided that disputes should be settled by local arbitration. He offered to submit the question to the newly-created Iowa Conciliation Board, but the men declined to agree to this. Mr. Schmidt announced upon receipt of the word from Washington that he was ready to name the company's arbiter at once.

The fate of the demand of the employees of the Des Moines City Railway for a material wage increase is now in the hands of the arbiters. The company chose B. S. Walker, a Des Moines real estate dealer and capitalist, as its arbiter, while the men chose C. C. Putnam, a lawyer. These two men agreed upon A. B. Funk, Iowa Industrial Commissioner, as the third member of the board.

Portland Wages Fixed

Oregon City Has Highest Wages So Far Awarded by National Board—Wages Date From July 1

The War Labor Board in a decision affecting the employees of the Portland Railway, Light & Power Company, Portland, Ore., has fixed the new scale of wages for motormen and conductors at 46 cents an hour for the first three months; 48 cents for the next nine months, and 50 cents thereafter. Other employees are to have their wages raised in the same proportion, but with the proviso that there shall be a minimum of 44 cents an hour. The decision provides, as in other cases, that the examiner shall apply the award, that the increase shall take effect as of July 1, and that the company shall have until Feb. 1 to make back payments.

48 CENTS HIGHEST HITHERTO

In surface line cases heretofore decided the highest award was in several cities where 43, 46 and 48 cents an hour for each of the classes respectively were awarded. The reason for establishing a higher scale in Portland was not given specifically, but it is known that the board conducted a special inquiry upon the cost of living in Portland and concerning the scale of wages in other industries as compared with wages in other cities.

The decision also adopts and quotes the comments made in the Cleveland case to the effect that the increase in wages may necessitate an increase in fares, and that this phase of the situation is commended to the attention of public utility commissions and to Congress for such legislation as may be needed to relieve the public utility concerns from financial embarrassment.

It is estimated that the increase granted to platform men and those in the wage scale submitted for the railway department in Portland will add between \$25,000 and \$30,000 a month to railway wages alone.

The demand of the platform men was for an increase from 38 cents an hour to 53 cents an hour for men who had been in the employ of the company for less than one year; from 40 cents to 55 cents an hour for those in service for more than two years, and from 45 to 60 cents an hour for men employed more than two years.

WAGES DATE FROM JULY 1

Franklin T. Griffith, president of the company, said that the wage increase granted will date from July 1 last, the date of the wage agreement which was signed by representatives of the union and the officials of the company, subject to decision upon the question of wages by the War Labor Board.

April 1, 1917, the minimum wage paid platform men was 26 cents an hour and the maximum 31 cents. June 1, 1917, this was increased to 29 cents and 34 cents, respectively. On October 1, 1917, the agreement as to wages and working conditions became effective which expired June 30, with a scale of 38, 40

and 45 cents an hour, according to length of service.

Under the decision of the War Labor Board the increase granted is 53 1-3 per cent of the increase asked by the union for the platform men employed under the minimum or intermediate schedule, and 33 1-3 per cent increase for those in maximum grade. However, the board materially shortens the period within the minimum wage by reducing the period of service during which it shall apply from one year to three months, and the period for attaining the highest wage from two years to nine months. Thus, all men who have been in service for more than one year will get the maximum wage.

It was reported from Portland on Oct. 26 that until further information is received from the War Labor Board as to application of the increases authorized for other employees, it is impossible to determine just what the increase may be for other branches, including the maintenance department and electrical workers. The scale embodies a long list of men in a diversity of work of expert character and wages ranging from 45 cents to \$1 an hour.

Respite for Cleveland Women Employees

Secretary of Labor Wilson has extended from Nov. 1 to Dec. 1 the time for removing women conductors from the cars of the Cleveland (Ohio) Railway. In a letter to A. L. Faulkner, federal labor mediator for the Cleveland district, Mr. Wilson said the new order was issued with a view to making a blanket ruling covering the necessity for employing women in all industries as a war measure.

In the meantime Attorney Florence Allen, representing the women conductors' association, has filed with William H. Taft, joint chairman of the National War Labor Board, formal complaint, asking that the Cleveland Railway and the Amalgamated Association show cause why the women should be removed from the cars.

John J. Stanley, president of the railway, is pleased with the step taken and additional women are now being employed in anticipation of a favorable decision within a short time. Mr. Stanley said that women must be employed if the road was to give the necessary service.

A conference of representatives of the different factions interested in the question of employing women conductors on the cars at Cleveland was scheduled to take place in Washington with the National War Labor Board on Nov. 8. Miss Rose Moriority and Attorney Florence Allen were selected by the women to look after the women's interests, while John J. Stanley, president, and H. E. Crawford, attorney, were to appear for the company.

Apparently the women felt that this conference was preliminary to the dismissal of the order issued by the Federal Labor Commissioner barring them from the cars as conductors.

Chicago Franchise Defeated

Politicians and Short-Sighted Theorists and Labor Element Turn Down Service-at-Cost Plan

Chicago's much discussed service-at-cost plan was rejected by the voters on Nov. 5 at a public referendum. Politicians desirous of keeping the traction question alive for the next mayoralty campaign and the union labor element fearing an increase in fare are credited with having swung the vote against the ordinance, which proposed turning over the surface and elevated properties to public trustees for operation at cost.

With no alternative proposition in view, the chances are that the companies will continue operation under their present franchises—the surface lines for nine years more and the elevated for about twenty years—and the people must be content with limited facilities. The biggest loss to the community will be the failure to get subways and extensions of elevated lines. The plans contemplated the expenditure of about \$300,000,000 for transportation improvement, one third of this to be used in the first six years.

Election day marked the close of a bitter controversy as has been waged in Chicago in many years. The shutting off of public gatherings because of the influenza epidemic forced the advocates and the opponents of the measure to carry on their campaign largely by printed matter and through the use of bill boards. The franchise boosters had the advantage of support from practically all the local newspapers. Allied on the side of the ordinance were the most representative civic organizations and conservative business men and women. The opposition was composed largely of politicians, municipal ownership theorists and a considerable element of organized labor.

While the principal claim of the opposition was that the new ordinance would mean increased fares, it also insisted that the initial purchase price as fixed by the ordinance was excessive; that the proposed rate of return was too high; that municipal ownership would be retarded if not made impossible, and that no settlement should be made while so many voters are fighting for their country. On behalf of the franchise it was stated that a fair purchase price and a fair rate of return had been fixed after long discussion; that municipal ownership was provided for in the measure, and that the plan to put a great amount of money into transportation betterments would be of benefit to the city and to the returning soldiers and sailors.

The fare situation will now engage the attention of the transportation companies. The elevated roads have already submitted their petition for a 7-cent fare to the Public Utilities Commission, and a decision is expected any day. The Chicago & West Towns Railway on the day following election received notice that a 7-cent fare had

been approved for that system. Three other cities in Illinois had previously been allowed to charge 7 cents, and ten cities a 6-cent rate. The outlook is said to be bright for getting relief from the commission, and a petition from the Chicago Surface Lines may be filed at any time.

Research Council Wants Information on Laboratories

The Engineering Foundation and the National Research Council are co-operating in compiling information about the research laboratories of the country and in promoting industrial research. To do this they request all electric railway and other laboratories which have not yet done so to send to the New York office a brief statement covering equipment, kind of research work, number and classification of men employed; name of person in charge, and research time—all, half, one-third, or other approximation.

Would Restrain Amalgamated

Action was brought by the Indianapolis Traction & Terminal Company in the United States District Court in Indianapolis, Ind., on Nov. 2, to enjoin officers of Local No. 645 and organizers of the Amalgamated Association from inducing or persuading employees of the Indianapolis Traction & Terminal Company to strike. A ballot was being taken by the union officials on Nov. 2, following the meeting that was held at 1 a. m.

Judge Anderson ordered the United States Marshal to serve subpoenas on the various union officials and the members of the Board of Safety of the city of Indianapolis and superintendent of the Police Department, who are made co-defendants. The hearing was set for Nov. 4.

At this hearing the case was continued until Nov. 8, when the issuing of a restraining order will be considered by the court. An attempt had been made to compel the Indianapolis Traction & Terminal Company to make a contract with the Amalgamated Association. This the company declined to do, as it already had a working contract with its trainmen.

The wages of the men were increased by the company on Oct. 13, following an order of the Public Service Commission establishing a 5-cent fare in the city of Indianapolis, which also called for a 50 per cent increase in the wage budget that would have to be allowed by the company.

The employees were represented by an attorney during the hearing of the fare case, and took part in the hearing, and had expressed no dissatisfaction to the Public Service Commission over the increased wages granted them. They have since contended that the increase was insufficient, and endeavored to compel the company to grant them further substantial increases, and in addition make a contract with the Amalgamated Association.

News Notes

Savannah Men Strike.—The trainmen in the employ of the Savannah (Ga.) Electric Company went on strike on Nov. 1. Both wages and recognition of the union are said to be the issues involved.

New Fender Presented.—A new style of fender was presented before the Public Service Commission of Massachusetts, on Oct. 29, by R. B. Stearns, vice-president of the Bay State Street Railway. C. D. Emmons, vice-president of the Boston & Worcester Street Railway, thought the new type of fender was preferable to the old one. There was no opposition to the fender, and the hearing was closed.

New Fuel Administrator for Virginia.—R. H. Angell, Roanoke, has been appointed by United States Fuel Administrator H. A. Garfield to be Federal Fuel Administrator for Virginia, in the place of H. F. Byrd, who has entered the military service. Mr. Angell is a well-known banker and business man of Roanoke. At the time of his present appointment he was local fuel administrator at Roanoke.

New Co-operative Plan in Effect.—The general committee of the new co-operative association of the Philadelphia (Pa.) Rapid Transit Company as a result of its first meeting on Oct. 21 has submitted to all members a statement showing that of the 7809 employees eligible for membership the applications of 6789, or more than 86 per cent, were on file. The co-operative plan of August, 1918, which has been described previously in the *ELECTRIC RAILWAY JOURNAL*, has therefore been declared operative and in full effect.

Coal Reserve for New York Companies.—The Interborough Rapid Transit Company, New York, N. Y., acting in co-operation with the New York State Fuel Administration, has arranged for the storing of 100,000 tons of bituminous steam coal to anticipate any possible delay in securing fuel through weather conditions. This supply of 100,000 tons represents approximately sixty days consumption by the company. Similar provisions have been made by the Brooklyn Rapid Transit and other public service companies.

Staggered Hours for Cleveland.—In order to enable the Cleveland (Ohio) Railway to aid in stamping out influenza the Health Department there is regulating the hours of closing commercial houses, office buildings and some classes of factories. All office buildings are required to close at 4.30 p. m.; cloak and suit factories and wholesale houses, 4.45; one-line houses,

such as men's and women's exclusive clothing stores, book stores and shoe stores, 5; department stores, 5.30; groceries and hardware stores, 6, and restaurants and saloons, 8 o'clock.

St. Louis Settlement Ordinance Killed.—Mayor Kiel of St. Louis, Mo., has signed the ordinance revoking the franchise settlement ordinance of the United Railways. This action followed the recent rejection of the settlement measure by the railway. The repeal of the ordinance was advised by City Counselor Daues. The matter of a new franchise for the company has been before the city administration of St. Louis for two years. The reasons for the rejection of the franchise settlement measure by the company were reviewed at length in the *ELECTRIC RAILWAY JOURNAL* for Oct. 19, page 711.

Milwaukee Electrification Progress.—H. F. Byram, federal director of the Chicago, Milwaukee & St. Paul Railway, recently announced after an inspection of the line that the first electric train over the road will arrive in Seattle on July 1 of next year, unless unforeseen delays occur. The electrification begins at Othello, in eastern Washington, and ends at Tacoma, covering a distance of 220 miles. With the 440-mile electric system through the Rocky Mountains, the Chicago Milwaukee & St. Paul Railroad will have 660 miles of electric railroad.

Must Grant Common User Rights.—A telegram received in Seattle, Wash., from the United States Shipping Board, Emergency Fleet Corporation, states that common user rights on the Seattle municipal elevated line must be granted as a condition of the government's loan of \$339,000 for the completion of the elevated and the purchase of new cars. About two months ago arrangements were made for the loan to the city, and it was understood at that time that common user rights would be required. The deal for the purchase of the Puget Sound Traction, Light & Power Company's railway system was under way, however, and it was thought that this would be completed in a few weeks.

Official New Orleans Award Announced.—The press dispatches of the award of the War Labor Board to the employees of the New Orleans Railway & Light Company, New Orleans, La., quoted in the *ELECTRIC RAILWAY JOURNAL* for Nov. 2, page 808, are the same as the official award. The company has promised to pay the employees their back pay at the award of the War Labor Board. A conference was held on Oct. 31 between Nelson H. Brown, general manager of the railway, and the representatives of the carmen's union, at which conference no agreement was reached. At this conference President Stadler of the union informed Mr. Brown that the gas and electric employees understand the War Labor Board's decision to mean that the prevailing union scale for carpenters and mechanics should be paid the railway's employees.

Financial and Corporate

Buffalo Interest in Default

International Railway Unable to Meet Payment Due Nov. 1 on Its Refunding and Improvement Bonds

The holders of the 5 per cent refunding and improvement bonds of the International Railway, Buffalo, N. Y., have been formally notified that the company is unable to pay the interest due on Nov. 1. The inability to meet obligations is laid to labor troubles and wage increases. E. G. Connette, president of the company, has issued the following statement to the bondholders of the company.

TROUBLE STARTED LAST MAY

"In May last our employees belonging to the union gave us notice that unless their wages were increased they would suspend work on June 15. June 14 the Mayor and Council of Buffalo agreed to increase the rate of fare and we granted the increase of wages demanded by the men, which amounted to about \$776,000 a year. The courts afterward decided that the resolution adopted by the Mayor and Council granting an increased rate of fare was subject to referendum under the city charter and an election was called for Aug 20.

"In the meantime the War Labor Board in Washington fixed a scale of wages which made an additional increase in the payroll of \$800,000 a year, and this increase was subject to the company securing an increase in the rate of fare. On Aug. 20 the voters, by a large majority, repudiated the action of the Mayor and Council.

"The union then demanded the War Labor Board rates notwithstanding the provision in the award making it dependent upon an increased fare, and as the company had not received an increased fare and could not pay the rates established by the War Labor Board the men suspended work and the strike continued for twenty-four days, ending on Oct. 26, when the City Council passed another resolution providing for a temporary increase in the rate of fare and reference of the matter for final determination to the Public Service Commission. On the strength of this action the company granted the higher rate of wages. This resolution is also subject to a referendum by the voters, but we are hopeful that it can be avoided."

\$16,735,000 OF BONDS OUTSTANDING

The bonds on which interest payment has been deferred mature on Nov. 1, 1962. On Dec. 31 last there were \$16,735,000 of the bonds outstanding.

The developments referred to by Mr. Connette in connection with the affairs of the company have been reviewed at

length from time to time in the *ELECTRIC RAILWAY JOURNAL*. The plan to organize the holders of the 4 per cent bonds of the company has also been referred to previously in this paper.

Chattanooga Can't Meet Interest

The management of the Chattanooga Railway & Light Company, Chattanooga, Tenn., has advised the holders of the Chattanooga Railways first consolidated mortgage bonds that the earnings of the railway which are covered by the mortgage securing these bonds have not been sufficient to furnish funds to pay the coupons due on Nov. 1. The letter says in part:

"Immediate reason for this difficulty is the constantly mounting costs of labor and materials with a fixed rate of income which, up to date, it has been impossible to increase. The rate of fare is fixed at 5 cents by ordinance of the city of Chattanooga, and the City Commissioners have not as yet consented to any increase. Several advances have already been made in wages, and on account of recent awards by the War Labor Board on other similar properties further advances must be made.

"These bonds are not assumed or guaranteed by the Chattanooga Railway & Light Company. The property will be operated as heretofore for the best interest of the bondholders unless and until the bondholders take such action as they may decide necessary to protect their interests."

Cleveland Results Improve

The new rate of fare in Cleveland, Ohio, is bringing results. Although the interest fund reached a very low mark some months ago, it is now within \$104,298 of the maximum of \$700,000. When that is reached, it will mean a drop in the rate of fare or the elimination of the 1 cent for transfers.

The operating report for September shows that \$81,998 was added to the interest fund. Should the expense of operation not increase too much with the approach of cold weather, it is probable that the turning point will be reached within two months more.

Passenger revenues for September amounted to \$1,129,026. There was a decrease of 7.11 per cent in the traffic and a reduction in car mileage of 2.48 per cent. Fielder Sanders, Street Railway Commissioner, stated that inability to secure men for car crews was responsible for the lower mileage record.

Undoubtedly the epidemic of influenza caused a loss of passenger revenue in October. Retail stores reported business dull during most of the month, due to the desire of the people to keep out of crowds as much as possible.

Poor Results in St. Louis

President McCulloch of the United Railways Makes It Plain Wherein the Six-Cent Fare Has Failed

Richard McCulloch, president of the United Railways, St. Louis, Mo., in a statement issued recently, said that but for the 6-cent fare the company would have failed to earn its interest charges for September by \$81,753. Another section of the statement sets forth that the "net earnings of the company for the nine months of the current year to date were \$1,553,911, or about 2.5 per cent on the valuation of \$60,000,000." Further, the president said that for the nine months of the year to date the company failed to earn its interest charges and "accumulated a deficit of \$347,876."

\$908,417 DECREASE FOR NINE MONTHS

As compared with last year, President McCulloch said the decrease in the amount available for the payment of interest charges for the nine months was \$908,417.

In a statistical analysis of the company's operating revenues, expenses and taxes, President McCulloch said:

"Operating revenues of the United Railways for the month of September were \$1,228,261, an increase of \$139,510 over September of last year, and a decrease of about \$21,000 compared with August of this year. Operating expenses and taxes were \$980,365, an increase of \$152,877. The increase in expenses was, accordingly, about \$13,300 more than the increase in revenues.

"Included in revenues is \$12,500, the amount collected from the additional 1 cent being charged in the city of St. Louis. This amount is nearly equal to the total increase in revenues experienced by the company.

"If the company were not allowed the increase in revenues resulting from the 6-cent fare it would have failed to earn its interest charges during September by \$81,753. Operating expenses for the month of September did not include any back wages, as did the month of August.

NUMBER OF RIDERS REDUCED

"The increase in the fare from 5 to 6 cents has reduced the number of rides on the city lines. Anticipated increases in operating expenses will make necessary the collection of more revenues from passengers. The railway has filed a petition with the Public Service Commission asking increased revenues.

"The undesirability of still further increasing the rate of fare has been pointed out and the company has recommended the restoration of the 5-cent fare and the installation of a distance tariff, so that the long-haul passengers may be permitted to pay more than the fares of the short-haul passengers may be reduced."

President McCulloch's opinion of the zone system, as expressed in a communication to the Missouri Commission, was noted in the issue of Sept. 28.

Portland Earnings Rise

1917 Earning Basis Would Be Gratifying if Costs Did Not Continue to Rise

The gross earnings of the Portland Railway, Light & Power Company, Portland, Md., for the calendar year 1917 showed an increase of \$540,400 or 9.85 per cent over those of the preceding years. This gain was offset by the rise of \$558,932 or 22.16 per cent in operating expenses.

The operating expenses for 1917, however, included charges of \$180,706 for the depreciation reserve. There was no corresponding operating charge in 1916, all the depreciation reserve prior to 1917 having been appropriated from surplus. On the basis of 1916 accounting, the net earnings for 1917 would show a gain of \$182,767 or 7.4 per cent.

The taxes showed the slight decrease of \$20,593 or 0.63 per cent, and owing mostly to a reduction of \$83,951 or 3.93 per cent in interest charges, the deductions fell off \$26,206 or 1.20 per

that the loss of revenue resulting from the influenza epidemic amounted to approximately \$1,000 a day and that a decrease in revenue has resulted in spite of the new 5 cent fare which was awarded by the Public Service Commission. In consequence a plea for a modification of interpretation of the order of the commission was made on Nov. 1 by Robert I. Todd, president, and Ferdinand Winter, general counsel for the Indianapolis Traction & Terminal Company. It was submitted to the commission that because of the language used in the order it was impossible for the company to secure the necessary temporary financial relief to meet the payment of notes and taxes coming due on Nov. 1.

The chairman of the commission appointed Commissioners Haynes and Corr to draw up an interpretation of the order which was to be considered further. The commissioners indicated, however, that they were willing to make an interpretation to the effect that there was no intention in the original order to repudiate any of the debts of the company, the idea of the commis-

Middle West Progressing

Total Income of Holding Company Increased \$131,141 and Net Showed Slight Advance

The comparative combined earnings of the various subsidiaries of the Middle West Utilities Company, Chicago, Ill., for the years ended April 30, 1917 and 1918, follows:

	1918	1917
Gross earnings	\$12,157,121	\$9,620,216
Operating expenses and taxes	8,562,689	6,117,460
Net earnings	\$3,594,432	\$3,502,756
Rentals on leased properties	222,909	205,940
Balance	\$3,371,523	\$3,296,816
Proportion of net earnings from construction and operating companies, not previously reported...	76,574
Total	\$3,448,097	\$3,296,816
Interest to outside holders	1,715,189	1,485,756
Amortization of discount	77,167	36,557
Dividends and proportion of undistributed earnings to outside holders	389,971	294,829

Earnings accruing to holding company... \$1,265,770 \$1,479,674

The increase in the gross earnings of the subsidiary companies during the last fiscal year was \$2,536,905. For the companies included in last year's report, the gain was \$1,137,224 or 11.8 per cent.

During the last year the subsidiaries secured rate increases at the rate of \$540,000 a year. As of April, the last month of the year, only \$115,000 of the increases had actually been realized, inasmuch as the preponderance of rate awards was for the latter part of the year. The increases now secured and applied for total more than \$1,100,000 a year.

Street and interurban railways operated by the Middle West Utilities Company now have 209 miles of track and provide 12.8 per cent of the aggregate annual gross earnings.

The total income of the holding company for 1917-1918 was \$1,955,210 as compared to \$1,824,069 for the year previous, and the net was \$1,041,601 as compared to \$1,026,585. The surplus balance on April 30, 1918, was \$1,387,565.

Shall Lessee or Lessor Pay?

The leases of the subsidiary lines of the Philadelphia (Pa.) Rapid Transit Company came up for judicial interpretation on Oct. 30 before Judges McMichael, Ferguson and Davis in Common Pleas Court No. 3 at Philadelphia. They were asked to determine whether the Philadelphia Rapid Transit Company or the underlying lines shall pay the excess profits tax imposed by the government. After the matter was presented to the court, decision was reserved.

The question is one of an interpretation of the leases. It is contended by the Philadelphia Rapid Transit Company that if it ever had been contem-

INCOME STATEMENT OF PORTLAND RAILWAY, LIGHT & POWER COMPANY FOR CALENDAR YEARS 1916 AND 1917

	1917		1916	
	Amount	Per Cent	Amount	Per Cent
Gross earnings	\$6,023,509	100.0	\$5,483,109	100.0
Operating expenses.....	\$3,080,538	51.2	\$2,521,606	46.0
Taxes	496,055	8.2	516,648	9.4
Total	\$3,576,593	59.4	\$3,038,254	55.4
Net earnings	\$2,446,916	40.6	\$2,444,855	44.6
Interest	\$2,047,336	34.0	\$2,131,287	38.8
Bridge rentals	104,715	1.7	46,970	0.9
Total	\$2,152,051	35.7	\$2,178,257	39.7
Surplus	\$294,865	4.9	\$266,598	4.9

cent. The final result was a gain of \$28,267 or 10.60 per cent in surplus.

The gross earnings of the company during the first six months of 1917 increased \$181,083 and during the second six months \$359,317. The latter rate of increase, it is said, was continued and improved during the early months of 1918, and if it were not for the great increases in operating costs, principally labor, the basis of gross earnings would be gratifying. It was estimated that the operating expenses during the year 1918 will advance about \$1,000,000.

Additions and betterments during 1917 involved the expenditure of \$306,000, after deductions for property sold and retired. Maintenance and depreciation reserves were strengthened to the extent of \$160,388, the balance on Dec. 31, 1917, being \$1,154,699.

Indianapolis Needs Relief

Meetings of the newly organized board of directors of the Indianapolis Traction & Terminal Company, which now includes the three directors who were nominated by the Governor of Indiana, the Mayor of Indianapolis and the Indianapolis Chamber of Commerce, were held recently and it was shown

that any large notes should, if possible, be renewed, so that funds secured from increased revenue might be used for current indebtedness and necessary improvements in service.

Boston Results Disappointing

In the three months the 7-cent fare has been in effect on the Boston (Mass.) Elevated Railway gross receipts have increased \$602,291 over the same three months a year ago. This is a gain of only about 13 per cent, while the fare advance from 5 cents to 7 cents is equal to a 40 per cent increase.

Changes in gross receipts by months since January, 1917, follow:

	1918		1917	
	Inc.	Per Cent	Inc.	Per Cent
January	\$96,269	*5.94	\$122,000	8.2
February	69,832	*4.86	31,000	2.25
March	40,000	*2.5	86,500	5.56
April	8,000	0.5	37,000	2.33
May	13,000	0.8	*11,500	*0.69
June	*44,000	*2.08	38,000	2.5
July	*46,000	*3.00	70,000	4.6
August	369,000	23.81	40,580	2.69
September	184,500	12.00	13,400	.88
October	48,791	2.97	23,000	1.42
November	20,500	1.4
December	*61,800	*3.6

*Decrease.

August was the first 7-cent fare month.

plated that the tax now imposed would come up the leases never would have been made. On the other hand, the subsidiaries state they turned over all their franchises, rights, property, and gave the lessees the right to do business and derive whatever profits they earned, and under the lease a definite compensation was fixed, which should not be diminished by "any taxes that might be assessable under the law or that might thereafter be lawfully assessed."

Financial News Notes

Ohio Road Wants to Issue Bonds.—The Mahoning & Shenango Railway & Light Company, Youngstown, Ohio, has asked authority from the Public Utilities Commission to issue and sell \$485,000 of 6 per cent bonds to provide funds for making improvements in its properties and retiring a bond issue of \$194,000 of a company which was absorbed by it.

Springfield Exchanges 5's for 7's.—The Springfield Railway & Light Company, Springfield, Mo., has exchanged three-year 7 per cent gold notes of a like face amount, dated Feb. 1, 1918, for \$265,000 of 5 per cent two-year gold notes. The remaining \$22,000 was taken up with cash on Nov. 1, at the office of the trustee, the Rhode Island Hospital Trust Company, Providence, R. I.

Common Stock Dividends Suspended.—E. C. Ryder, president of the Bangor

Railway & Electric Company, Bangor, Me., in a letter to the holders of common stock says: "On account of the abnormal conditions existing at the present time, the directors deem it advisable for the present to suspend payment of dividends on the common stock. Stockholders may rest assured that payment of dividends on the common stock will be resumed as soon as conditions warrant."

Suit for Receivers Heard.—The suit of John W. Seaman et al, versus the United Railways, St. Louis, Mo., which seeks to have a receiver appointed for the company in the United States District Court, was argued recently before Judge Dyer on a motion to dismiss made by defendants because of alleged charges of fraud in the petition and because of the statute of limitations. The motion alleged that the charges of fraud were not upheld by facts. Charles W. Bates, Lambert E. Walther and Ephrim Caplin appeared for the petitioners, and A. D. Norton argued for the railway.

Standard Issues New Notes.—A syndicate headed by H. M. Byllesby & Company, New York, N. Y., and Bonbright & Company, Inc., Chicago, Ill., is bringing out a new issue of \$750,000 of Standard Gas & Electric Company three-year 7 per cent collateral trust gold notes, due Sept. 1, 1921, at a price to yield 8 per cent. The notes are a direct obligation of the company secured by the pledge of securities of subsidiary companies, consisting of \$750,000 bonds and notes, \$750,000 preferred stocks and \$500,000 common stocks, all dividend paying and having an appraised value of \$1,800,000.

Quebec Net Cut in Half.—The gross earnings from operation of the Quebec Railway, Light, Heat & Power Com-

pany, Ltd., Quebec, Canada, for the year ended June 30, 1918, were \$1,797,852 as compared with \$1,832,031 in 1917, a decrease of \$34,179. After the addition of miscellaneous income of \$230,088, the revenue from all sources amounted to \$2,027,941, a decrease of \$34,951. The operating and maintenance expenses were \$1,235,724 as compared with \$1,155,969 in 1917, an increase of \$79,755. The fixed charges and taxes amounted to \$696,910, leaving a net surplus of \$95,307. This compares with a net surplus of \$200,587 for the year preceding. The total credit to surplus account on June 30, 1918, was \$753,091. The maintenance expenses in the last year totaled \$243,225, as compared to \$226,366 for the year preceding.

Porto Rico Net Drops.—The gross earnings of the Porto Rico Railways, Ltd., San Juan, P. R., for the twelve months ended Dec. 31, 1917, amounted to \$902,392, an increase of \$73,336 as compared to those of the preceding year. Owing to a heavy increase in operating expenses, however, and a decline in other income, the gross income at \$401,211 represented a decrease of \$20,761. Higher labor and material costs, a drought necessitating an added expense of \$15,000 for steam-plant operation, and unabated jitney competition all were factors leading to the decline in gross income. After provision for interest charges and preferred dividends, the surplus for 1917 amounted to \$132,794. With the addition of the 1916 balance of \$90,289 and the transfer of \$100,000 to the depreciation reserve, the balance carried forward was \$123,084. Expenditures for capital purposes, chiefly for lighting extensions to the company's lines totaled \$64,004 in 1917.

Electric Railway Monthly Earnings

AURORA, ELGIN & CHICAGO RAILROAD, WHEATON, ILL.					
Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., Aug., '18	\$212,237	*\$173,699	\$38,538	\$35,825	\$2,713
1m., Aug., '17	217,103	*142,877	74,226	35,700	38,526
8m., Aug., '18	1,391,769	*1,195,478	196,291	286,752	†90,461
8m., Aug., '17	1,435,994	*1,027,928	408,066	286,086	121,980
BATON ROUGE (LA.) ELECTRIC COMPANY					
1m., Aug., '18	\$23,413	*\$12,017	\$11,396	\$3,908	\$7,488
1m., Aug., '17	18,122	*9,772	8,350	3,606	4,744
12m., Aug., '18	252,385	*130,211	122,174	45,084	77,090
12m., Aug., '17	225,492	*110,971	114,521	42,432	72,089
BROCKTON & PLYMOUTH STREET RAILWAY, PLYMOUTH, MASS.					
1m., Aug., '18	\$12,290	*\$11,620	\$670	\$1,439	†\$769
1m., Aug., '17	15,509	*11,605	3,904	1,253	2,651
12m., Aug., '18	111,736	*121,741	†10,005	16,256	†26,261
12m., Aug., '17	125,442	*121,453	3,989	14,073	†10,084
CAPE BRETON ELECTRIC COMPANY, LTD., SYDNEY, N. S.					
1m., Aug., '18	\$44,716	*\$33,746	\$10,970	\$6,536	\$4,434
1m., Aug., '17	39,683	*26,667	13,016	6,552	6,464
12m., Aug., '18	495,112	*356,037	139,075	78,383	60,692
12m., Aug., '17	437,604	*266,661	170,943	78,718	92,225
CLEVELAND, PAINESVILLE & EASTERN RAILROAD, WILLOUGHBY, OHIO					
1m., Aug., '18	\$52,035	*\$33,779	\$18,256	\$11,777	\$6,479
1m., Aug., '17	56,717	*31,183	25,534	11,574	13,960
8m., Aug., '18	365,884	*245,663	120,221	92,487	27,734
8m., Aug., '17	356,811	*217,283	139,528	93,581	45,946
COLUMBUS (GA.) ELECTRIC COMPANY					
1m., Aug., '18	\$91,723	*\$51,986	\$39,737	\$32,983	\$6,754
1m., Aug., '17	92,681	*36,376	56,305	31,075	25,230
12m., Aug., '18	1,187,751	*490,547	697,204	387,280	309,924
12m., Aug., '17	1,023,721	*388,162	635,559	347,148	288,411

EL PASO (TEX.) ELECTRIC COMPANY					
Period	Operating Revenues	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., Aug., '18	\$99,022	*\$74,079	\$24,943	\$6,935	\$18,007
1m., Aug., '17	105,941	*71,710	34,231	6,339	27,892
12m., Aug., '18	1,261,931	*839,280	422,651	79,851	342,800
12m., Aug., '17	1,265,299	*760,604	504,695	61,913	442,782
GALVESTON-HOUSTON ELECTRIC COMPANY, GALVESTON, TEX.					
1m., Aug., '18	\$254,353	*\$164,566	\$89,787	\$39,147	\$50,640
1m., Aug., '17	183,597	*116,715	66,882	37,907	28,975
12m., Aug., '18	2,532,790	*1,647,322	885,468	467,891	417,577
12m., Aug., '17	1,976,953	*1,313,944	663,009	444,620	218,389
HOUGHTON COUNTY TRACTION COMPANY, HOUGHTON, MICH.					
1m., Aug., '18	\$27,543	*\$18,162	\$9,381	\$5,007	\$4,374
1m., Aug., '17	29,133	*19,243	9,890	5,096	4,794
12m., Aug., '18	333,468	*219,849	113,619	60,410	53,209
12m., Aug., '17	339,876	*203,514	136,362	61,950	74,412
INTERBOROUGH RAPID TRANSIT COMPANY, NEW YORK, N. Y.					
1m., Aug., '18	\$3,031,057	*\$2,182,160	\$848,897	\$1,407,376	\$†\$70,763
1m., Aug., '17	2,925,035	*1,697,912	1,227,123	1,068,770	\$‡449,195
2m., Aug., '18	6,259,046	*4,262,670	1,996,376	2,769,150	\$‡217,268
2m., Aug., '17	5,836,337	*3,391,046	2,445,291	2,133,753	\$†900,983
JACKSONVILLE (FLA.) TRACTION COMPANY					
1m., Aug., '18	\$84,254	*\$64,175	\$20,079	\$16,586	\$3,493
1m., Aug., '17	53,176	*36,982	16,194	15,815	379
12m., Aug., '18	830,038	*589,193	240,845	194,627	46,218
12m., Aug., '17	663,524	*444,714	218,810	187,483	31,327
LAKE SHORE ELECTRIC RAILWAY, CLEVELAND, OHIO					
1m., Aug., '18	\$238,586	*\$160,234	\$78,352	\$36,290	\$42,062
1m., Aug., '17	180,006	*114,431	65,575	35,174	30,400
8m., Aug., '18	1,417,697	*1,011,951	405,746	289,402	116,344
8m., Aug., '17	1,165,162	*785,736	379,426	276,338	103,087

*Includes taxes. † Deficit. ‡ Includes non-operating income. † Includes accruals under rapid transit contracts with city payable from future earnings.

Traffic and Transportation

Relief for Winnipeg

Straight Five-Cent Fare Temporarily, Pending Full Investigation by the Public Utilities Commissioner

Within two weeks of presenting a petition to the City Council of Winnipeg, Man., for relief, the Winnipeg Electric Railway was permitted to increase fares on all city lines. The relief given is only temporary and is preliminary to a full investigation by the Public Utilities Commissioner, the results of which will determine whether the temporary increase will be confirmed, reduced or further enhanced.

The new scale of fares, which became effective on Nov. 1, is as follows: Cash fare, 5 cents; tickets (good at all times) five for 25 cents; workmen's tickets (good from 6 to 8 a. m., 5 to 6.30 p. m. week days and all day Sundays), six for 25 cents; tickets for children under sixteen years, seven for 25 cents.

The rates charged prior to Nov. 1 were: Six tickets for 25 cents; eight workmen's tickets for 25 cents; ten children's tickets for 25 cents.

The necessity for applying for relief had been evident for some time, and the general public had been educated to this point by means of advertising and the company's bulletin which is distributed on the cars every two weeks. The application for relief,

however, was hastened by the award of a board of conciliation which investigated demands for increased wages from motormen and conductors, and allowed increases representing an addition to the company's payroll of \$362,000 annually. A. W. McLimont, general manager of the company, presented the petition for relief to the City Council. The petition asked for a 6-cent fare, seven children's tickets for a quarter, all other fares to be abolished. The Council debated the application for three days and the friendly spirit which pervaded the discussion was very marked. Mr. McLimont attended all the sessions and discussed the company's difficulties very frankly.

Practically each member of the Council admitted the company had established a *prima facie* case for increased revenue, and expressed the opinion that immediate assistance must be given. Upon the advice of the city solicitor, however, a motion granting a temporary increase of fares was not put, but another motion was presented and carried, the intent of which, it was explained, would compel the company to apply immediately to the Public Utilities Commissioner for relief. A committee of five members of the Council, together with the solicitor, was appointed to appear with the company before the commissioner and sup-

port the application for an interim order as outlined herein, pending investigation of the application for permanent relief.

The Public Utilities Commissioner expressed pleasure at the fact that the city and the company had got together and had agreed as to the nature of the order, which he promulgated forthwith. Meanwhile the original petition for permanent relief is still before the commissioner, and he will open his inquiry on Nov. 11.

Sixty-One Fare Changes

American Association List Notes Increases from Approximately Sept. 15 to Oct. 15

Between the closing of the last preceding list of fare increases on Sept. 15 (ELECTRIC RAILWAY JOURNAL of Sept. 28, page 593) and about the middle of October, sixty-one additional fare revisions upward have been made throughout the United States and Canada. More than 17,500,000 people in 301 cities are paying increased fares. These data have been compiled by the information bureau of the American Electric Railway Association.

Most of the new increases, as the accompanying list shows, are from 5 to 6 cents, the companies making such a change numbering twenty. Thirteen railways have increased their unit fare from 5 to 7 cents with a 1-cent charge for transfers, and eight have raised their fares from 5 to 7 cents. Four cities having zone systems have increased their rate from 5 to 6 cents, and two cities have made zone changes. The detailed list follows:

DETAILS OF THE AWARDS COVERING THE PERIOD FROM SEPT. 15 TO OCT. 15.

Name	Population	Name	Population	Name	Population
<i>Cities in Which a 10-Cent Fare Is Being Charged:</i>		<i>Cities Having a 6-Cent Central Zone With Additional Charge for Rides Outside Thereof:</i>		Victoria, Can.	65,000
Levis, Can.	22,000	*Springfield, Mass.	105,942	Rockford, Ill.	55,785
<i>Cities in Which an 8-Cent Fare Is Being Charged:</i>		*Portland, Me.	63,867	Springfield, O.	51,550
Manchester, N. H.	78,283	*Chicopee, Mass.	29,319	Springfield, Mo.	40,341
<i>Cities in Which a 15-Cent Fare Is Charged for Owl Service and a 6-Cent Fare at Other Times:</i>		*Westfield, Mass.	18,391	Concord, N. C.	8,715
*Montreal, Can.	600,000	Maynard, Mass.	6,890	Napa, Cal.	7,500
<i>Cities in Which a 10-Cent Fare Is Charged for Owl Service and a 7-Cent Fare at Other Times:</i>		<i>Cities in Which a 6-Cent Fare Is Being Charged:</i>		Salisbury, N. C.	7,153
*Edmonton, Can. (municipal lines) .	70,000	Baltimore, Md.	589,631	*Owl fare recently increased from 10 cents.	
<i>Cities in Which a 7-Cent Fare Plus 1 Cent for Transfer Is Being Charged (all in New Jersey):</i>		New Orleans, La.	371,747	*Daytime fare recently increased from 6 cents.	
*Newark.	408,984	Worcester, Mass.	163,314	*Recently increased from 5 cents, plus 1 cent for transfer.	
*Jersey City	306,345	Syracuse, N. Y. (Syracuse & Suburban Ry. lines only) .	155,624	*Recently increased from 6 cents.	
*Paterson	138,443	Trenton, N. J.	111,593	*Fare given in former list as 6 cents.	
*Camden	106,233	Harrisburg, Pa.	72,015	*Recently increased from 5 cent central zone.	
*Elizabeth	86,690	Springfield, Ill.	61,120	*Fare given in former compilation as "6 cents on some lines and 5 cents on others."	
*Hoboken	77,214	La Crosse, Wis.	31,120		
*Passaic	71,714	New Westminster, Can.	17,200	<i>Out of the sixty-seven cities having a population of more than 100,000, forty have up to the present received fare increases in one form or another, while in twenty cities action is pending and in seven no action has been taken. The complete record for such cities follows:</i>	
*Bayonne	69,893	Eureka, Cal.	14,684	8-cent fare 1	
*Perth Amboy.	41,815	Santa Cruz, Cal.	14,594	7-cent, plus 1 cent for transfer. 4	
*Orange	33,080	Janesville, Wis.	14,339	7-cent fare 4	
*Plainfield	25,805	Berlin, N. H.	13,559	6-cent central zone, 6-cent outer zone. . . 1	
*New Brunswick	25,512	Barre, Vt.	12,582	6-cent central zone, 2-cent outer zone. . . 4	
*Hackensack	16,945	Mattoon, Ill.	12,169	6-cent fares 16	
*Rahway	10,219	Titusville, Pa.	8,713	5-cent central zone, 2-cent outer zone. . . 3	
<i>Cities in Which a 7-Cent Fare Is Being Charged:</i>		Laurel, Miss.	8,465	5-cent central zone, 3 cents a mile outside 1	
*Reading, Pa.	109,381	Montpelier, Vt.	7,830	5-cent, plus 1 cent for transfer. 3	
*Paducah, Ky.	28,842	Hanover, Pa.	7,057	Reduced tickets abolished. 2	
*Hagerstown, Md.	25,679	Charleston, Ill.	5,884	Cost of service plan adopted. 1	
Galesburg, Ill.	24,276	Taylorville, Ill.	5,446	7-cent fare asked for. 5	
Lebanon, Pa.	20,779	<i>Cities in Which Have a 5-Cent Central Zone With an Additional Charge for Rides Outside Thereof:</i>		6-cent fare asked for. 10	
Greenville, S. C.	18,181	Los Angeles, Cal.	503,812	Zone system under investigation. 2	
Anderson, S. C.	12,266	<i>Cities Having a 5-Cent Fare With an Additional Charge of 1 Cent for Transfer:</i>		General relief asked for. 1	
*Frederick, Md.	11,112	Greensboro, N. C.	15,895	Charge for transfer in court. 1	
Newtonville, Mass.	4,850	<i>Cities in Which Reduced Rate Tickets Have Been Abolished and a 5-Cent Fare Is Charged:</i>		City to purchase 1	
		Ottawa, Can.	110,000	No action 7	
		Peoria, Ill.	71,458		

Urges Initial Ten-Cent Fare

Receiver Donham of Bay State Street Railway Says This Rate Is Necessary and He Threatens Many Abandonments

At the opening of the Bay State Street Railway 10-cent fare case before the Public Service Commission of Massachusetts on Oct. 31, attended by counsel and representatives from every city and town in eastern Massachusetts, Counselor Pillsbury for Receiver Donham said in part:

JUNE SCHEDULE UNSATISFACTORY

"The schedule of rates put into effect on June 24, 1918, has not proved satisfactory to the public or to the employees, and has generally been criticized because it is too complicated. Such schedule provided for certain reduced rate city tickets, put into effect at the request of some representatives of the cities, in the hope that they would build up traffic enough to compensate for reduction in fare. They have not had this effect.

"The only result of these tickets, so far as we can determine, has been to permit a certain portion of the public to ride cheaper than the remainder of the public. The schedule has not produced sufficient revenue and the receiver will tell how near he is to failure to earn even operating expenses.

"It is believed the schedule under consideration eliminates operating difficulties and complexities and meets criticism of the public. It eliminates all tickets, except pupils', enlarges the existing central area in cities to a diameter of approximately 5 miles, fixes length of zones at 2 miles instead of 1, and with a rate of approximately 2½ cents a mile establishes the initial fare of 10 cents."

In requesting approval of his new 10-cent fare schedule, Receiver Donham said in part:

"This is not an ordinary case. The immediate problem is whether the Bay State Street Railway system shall continue to operate. If the day comes when as receiver I am not getting enough income to operate the property, I shall of necessity report the facts to the Federal Court, and if I mistake not the order of the court will follow as inexorably as a law of nature, and the property will cease to operate.

WAGES MUST GO UP

"Wages on the Bay State must go up in the immediate future, because our scale of wages is unfairly low compared with other industries and other street railways. This subject is before the War Labor Board. If wages are not increased, operation of the Bay State property will cease for lack of men. I have no money to pay increased wages. If wages are increased, the property will in my judgment shut down for lack of money to keep it going.

"The only remedy is more revenue, and that immediately. I desire to urge most strongly that the commissioners should not suspend operation of this

schedule with the serious responsibilities involved, but should allow it to go into effect at once, and then conclude these hearings at their convenience.

"I offer as an exhibit certain facts about the financial status of the receivership and the company. Since the year ended June 30, 1914, just before the war in Europe, annual operating costs have increased \$3,230,000, or 44 per cent, and annual income less than \$1,000,000, or about 11 per cent. The deficit (on the basis of this commission's valuation for rate-making purposes) as compared with the full return to which owners of this property are entitled, has grown from \$588,816 in the year ended June 30, 1914, to approximately \$2,800,000 in the calendar year drawing to a close, and on top of this I am facing a wage increase. Wages have already increased from \$4,219,000 in 1914 to a present basis of \$6,175,000, or 46 per cent.

"Obviously this fare increase is not in itself in the interest of cities served by the Bay State. It is bad for business. It will lessen riding and lessen sales of goods in stores. It puts an additional burden on every group in the community. In every other line it is admitted that war costs of production must increase war prices to the consumer. Electric railways are no exception. It is within the power of this commission to shut down the Bay State Street Railway. The problem is whether it wishes to assume this responsibility by suspending this rate schedule. Is a 10-cent fare worse than no service?"

Mr. Donham stated further that the road had not taken advantage of the relief provided in the act passed by the last Legislature because, under the statute, \$6,000,000 must be raised before the road could be taken out of the receiver's hands, and with present monetary conditions that condition could not be met. He added that if the road gets the increase in fares he thought the reorganization would probably take place within the next six months. Mr. Donham said further:

"Even if the commission grants the increase, I contemplate discontinuing certain lines because of their physical condition. In my opinion we shall have to have community assistance of some sort eventually."

Receiver Acts in Fare Case

United States Judge George W. Rae, upon application of William G. Phelps, receiver of the Binghamton (N. Y.) Railway, has made an order directed to the city of Binghamton, villages of Port Dickinson, Johnson City, Endicott and the village and town of Union, to show cause in the United States District Court at Auburn on Nov. 12, why

an order should not be made directing the receiver of the railway to increase the rate of fare from 5 cents to 7 cents during the period of the war and for two years thereafter, subject to the approval as to the reasonableness of such rate by the Public Service Commission for the Second District of New York.

It is the claim of the receiver and his attorneys that the Binghamton Railway has a right under its special charter granted by the Legislature in 1868, to charge not to exceed 5 cents a mile for carrying passengers on the Court Street line through Main Street and Lestershire and on the Chenango Street line from Court Street to Port Dickinson; and that there is no limitation by any of its franchises or charter upon the rate of fare which it has a right to charge on the Tompkins Street line, the Leroy Street line, the Beethoven Street line, Floral Avenue in the town of Union, between Hooper, Endicott and Union and between Hooper and Johnson City, nor on Broad Avenue nor any of the lines that were built in the town of Binghamton for which authority or consents were received from the Commissioner of Highways of the town.

Ten-Cent Unit on Westboro-Hopkinton Line

The Middlesex & Boston Street Railway, Newtonville, Mass., has notified the town authorities of Westboro and Hopkinton that on Nov. 8 a 10-cent fare unit will be put into effect on the 6-mile line connecting these two points, in place of the present 8-cent unit.

At a recent conference with the town authorities, George M. Cox, vice-president and general manager of the company, stated that increasing cost of operation would make it necessary to discontinue the service if the present fare unit were not increased. There appeared to be a general recognition at the meeting that the situation was a serious one.

By the new tariff the fare from Westboro to Hopkinton and vice versa will be increased from 16 cents to 20 cents. The dividing line between the two present zones at Woodville will be retained. A 7-cent fare unit is in effect on the company's line between Hopkinton and Framingham, without transfer arrangements at the intersection point. Under the new schedule of fares there will be no change in this respect.

The company ordered about a dozen one-man cars last winter and one of these is to be placed in service on the Westboro-Hopkinton line to reduce expenses. The townspeople have agreed tentatively to make up the deficit, if any, occurring on the line after the institution of the 10-cent unit.

The new tariff has been filed with the Public Service Commission, and so far no opposition has developed. The company will institute one-man car service under a general permission of the commission received some time ago.

Tickets Abolished

All District of Columbia Companies Are Allowed to Charge a Straight Five-Cent Car Fare

After public hearings on the petitions of the Washington Railway & Electric Company and the Capital Traction Company, Washington, D. C., for an increase in the rate of fare for transportation in the District of Columbia, the Public Utilities Commission on Oct. 26 issued orders authorizing the companies to amend their tariffs by abolishing the sale of six tickets for 25 cents and to charge a uniform cash fare of 5 cents per passenger per trip. The order became effective at once.

SIX COMPANIES IN WASHINGTON

These companies furnish transportation facilities to the majority of the residents of the District of Columbia. There are, however, four other companies operating either wholly or in part in the District. In view of the general provision of law which requires the tickets issued by any one railway at six for 25 cents to be valid for transportation on the lines of any other company within the District, and in view of the commission's action abolishing the sale and use of tickets on the lines of the Capital Traction Company and the Washington Railway & Electric Company, the commission has ruled it to be necessary in justice to the companies not affected by such action that the rate of fare on all railways within the District of Columbia be uniform. It has therefore ordered that the four other companies, the East Washington Heights Traction Railroad, the Washington-Virginia Railway, the Washington & Maryland Railway and the Washington & Old Dominion Railway be authorized to abolish the sale of six tickets for 25 cents and to charge a uniform cash fare of 5 cents per passenger per trip, with the present transfer privileges. All tickets outstanding in the hands of the public at the time the order became effective are to be valid for transportation if presented before Dec. 1, or are to be redeemed at their face value by the companies issuing them.

The opinion of the commission in the cases of both the Washington Railway & Electric Company and the Capital Traction Company follows:

MUST SHARE BURDENS

"1. That war times are causing an abnormal situation, particularly in the National Capital with its present crowded condition. While it is true that operating expenses and costs of material have greatly advanced, it is likewise true that a much larger source of revenue to the railway has been provided by this abnormal increase in population. This crowded condition has occasioned many inconveniences and distractions in service which are being borne by the public while the railways are receiving the benefit of the greatly increased number of fares. Under these conditions, it is only right and proper

that the utility must bear its share of the war's burdens, as represented in improved service and such other benefits to the public as the commission may determine, just as every person and institution must bear its share.

"2. That it appreciates the patient manner in which the public has accepted the railway service as now given them in the District of Columbia, which is conceded by the companies and the public, and is known to the commission to be, much below the standard which should be maintained. In view of the assertions made by the companies as shown by the record in this case that the quality of service depends in large measure upon the sufficiency of the revenue received by them, and the commission being of the opinion that the increased revenue, as sought by the companies in their petitions, is more than sufficient to meet the recent large increases in the wages of its employees made necessary by the extreme war conditions as well as the constantly increased prices of materials, the commission will expect the companies to bring the service to proper standard.

"3. That in view of the action of the commission in granting this increase in fare in advance of a finding by it of the fair value of the property of the company on which it should be allowed to earn a reasonable return and as a condition of such increase of fares, there shall be a determination at an early date by the commission of the question of transfers between the lines of the Washington Railway & Electric Company and the Capital Traction Company, at such points as may be fixed by the commission."

Mr. Beeler Reports on Dallas

John A. Beeler, New York expert employed by the city of Dallas, Tex., to suggest improvements in electric railway traffic in Dallas, filed the first of these reports on Nov. 1 with the City Commission. He recommends changes in routing and schedules, to improve the service 20 per cent.

Under the proposed routings, every line will become a cross-town line, largely eliminating the necessity of transfers, and consequently lessening congestion in the business section.

The rerouting will give patrons approximately 20 per cent more service.

On Nov. 4 Mr. Beeler planned to submit a report on vehicular traffic.

At a later date he will submit a report on proposed extensions, including the proposed Oakland Cemetery line, Oak Lawn extensions, City Hospital line and line to Rosemont in Oak Cliff.

Most prominent in his recommendations are the two new cross-town routings of Oak Cliff cars over the Ervay, Bryan and Junius Heights lines.

Every line in Dallas becomes a cross-town line, with the exception of the new Second Avenue line, which will pass through the business section and terminate at the Sanger loop.

Mr. Beeler recommends that two sections of lines be abandoned because of insufficient traffic to justify them.

Federal Court Petitioned

Kansas City Railways Says War Labor Board Decision Renders Nugatory All Local Fare Restrictions

In consequence of the recent wage award of the War Labor Board, the Kansas City (Mo.) Railways on Nov. 1 asked the federal courts to see that the necessary fare increases are put into effect. The War Labor Board's award contained the statement that the company should be permitted to charge such higher fares as would enable it to pay the increased wages, the award by stipulation having been made dependent upon the financial ability of the company to pay. Inasmuch as the Public Service Commissions of Kansas and Missouri, as well as the city officials, were certain to oppose any direct increase by the company as a result of the recommendation of the War Labor Board, the company has resorted to the federal courts.

The petition was filed in the United States District Courts in Missouri and Kansas simultaneously. It asks that the courts (1) take complete jurisdiction of the property; (2) continue the award of the War Labor Board and enforce this; (3) determine that the award is a mandate of the national government, pursuant to its war power, and that as such it is superior to any and all local or state regulations and limitations which are noted as being in conflict with the Constitution of the United States; (4) determine the rate of fare necessary to pay the wages specified and other charges necessary to the rendition of proper and uninterrupted service; (5) grant an injunction against interference with the collection of such charges; (6) retain jurisdiction and make necessary orders from time to time, and (7) grant other relief as is deemed just.

The company in this petition makes definite its present revenue needs to meet the wage finding of the board. It suggests an 8-cent fare for adults, a 4-cent fare for children, and a 1-cent charge for transfers.

The petition avers that the War Labor Board has authority to do all things needful to bring about the enforcement of its orders. The board's powers to carry its mandates into effect, "springing, as they do, from the national war power, render nugatory all state or local regulations or restrictions inconsistent therewith. Such is the effect and meaning of Section 8, Article 1, Section 2, Article 2, and Article 6 of the Constitution of the United States."

The local rate situation of the Kansas City Railways is full of complications. The Public Utilities Commission of Kansas recently held a preliminary hearing on fares, the hearing being postponed until some date after Nov. 7.

The Supreme Court of Kansas had a short time previously refused to issue an injunction against the commission restraining it from assuming jurisdiction over fares. Nobody can

predict, of course, the action of the commission—which might follow the pleadings of the city officials and require maintenance of 5-cent fares, or which might increase fares to the same level as that established by the Missouri commission, 6 cents. At present, the company collects 5 cents from passengers boarding cars in Kansas and another cent when such passengers cross the State line into Kansas City, Mo.

The Missouri Public Service Commission ordered the Kansas City Railways to charge 6-cent fares. Judge Slate of the Cole County court decided that the commission had no authority to make such an order in view of the franchise provision as to 5-cent fares in Kansas City, Mo. The Supreme Court of Missouri, to which appeal was taken from Judge Slate's decision, ordered that the extra cent be impounded pending final disposal of the case. Passengers paying 6 cents receive coupons.

Transportation News Notes

Quincy Wants Seven Cents.—The Quincy (Ill.) Street Railway, a subsidiary of the Illinois Traction System, is asking for a 7-cent fare.

Detroit Fare Case Advanced.—The United States Supreme Court has advanced to Dec. 9 the hearing in the case of the Detroit (Mich.) United Railway against the City of Detroit, involving the rate of fare that may be charged.

Fare Increase in Raymond.—The Willapa Harbor Electric Company, Raymond, Wash., has announced an increase in fare between Raymond and South Bend from 10 cents to 15 cents. The increase is to become effective on Nov. 18. The line is a little more than 5 miles long.

New Orleans Fare Case Postponed.—The injunction suit of Wilbur Black and other labor leaders against the New Orleans Railway & Light Company, New Orleans, La., to prevent the collection of 6-cent fares was continued by Judge Gage of the Civil District Court until Nov. 14, as the franchises and ordinances necessary to the determination of the case were not ready.

Railway Successful in First Stage.—The British Columbia Electric Railway, Vancouver, B. C., was successful on Oct. 30 in the first stage of its fight for increasing fares to 6 cents when Justice MacDonald gave a decision holding the company is entitled legally to collect 6 cents for each fare despite Mayor Gale's refusal to sign the by-law giving this concession to the railway.

Night Service Reduced During Influenza.—The Columbus Railway, Power

& Light Company, Columbus, Ohio, has reduced its night service about 35 per cent, as a result of light travel caused by suspension of all meetings and gatherings on the order of the health department. As soon as the epidemic of influenza decreases sufficiently to lift the ban, full service will be restored.

Increase for Atlantic City Line.—The Board of Public Utility Commissioners of New Jersey has authorized Clarence L. Cole, receiver of the Atlantic City & Shore Railroad, Atlantic City, N. J., to increase from 5 cents to 6 cents the fare in the two zones between Atlantic City and Longport, and also to increase from \$5.25 to \$6.50 the rate for 100-trip family books between the same places.

Wants Six-Cent Zones.—The Trenton, Bristol & Philadelphia Street Railway, operating from Morrisville to Torresdale, Pa., has filed with the Public Service Commission of Pennsylvania notice of an increase in fares, effective on Dec. 1. The increase will boost the zone rate from 5 cents to 6 cents. The company will sell commutation zone tickets for \$2 for a strip of thirty-five tickets, or about 5¾ cents a trip.

Partial Suspension of Traffic.—Falling off in traffic has caused the suspension by the Danbury & Bethel Street Railway, Danbury, Conn., of all service on the East Side extension in Bethel between 8.30 in the morning and 4.30 in the afternoon. Under the new schedule the East Side extension is only operated between 6.10 a. m. to 8.30 a. m. and from 4.20 p. m. to 9 p. m. The railway is in the hands of a receiver.

Six Cents for Beaumont.—The City Council of Beaumont, Tex., has authorized the Eastern Texas Electric Company to charge 6 cents for adult fares. The increase was allowed after a thorough investigation of the company's affairs by a special committee of the City Council. The company agreed to provide more equipment and raise the wages of trainmen to 38 cents an hour for the first three months' service, 40 cents an hour for the succeeding nine months and 42 cents an hour thereafter. Men who operate interurban and one-man cars are to receive a bonus from the company.

Authorized to Suspend Service Temporarily.—The Puget Sound Traction, Light & Power Company, Seattle, Wash., has been authorized by the City Council to discontinue service on one Ballard line, the company agreeing to give to the city the use of about 2000 ft. of track in Ballard on Market Street, from Fourteenth Avenue, N. W., to Twentieth Avenue, N. W., where the twenty-five new cars bought in St. Paul will be stored. The discontinuance of the service will be in effect until Jan. 1, during which time the cars can be unloaded and made ready for service, at a saving to the city of demurrage charges of approximately \$10 a day.

Wants Transfers Granted.—Ward Kremer, counsel for Bradley Beach, has petitioned the Board of Public Utility

Commissioners to grant transfers for the residents of that borough in the event that the Atlantic Coast Electric Railway, Asbury Park, N. J., is granted permission to raise fares to 7 cents. The request was made at a meeting of the commission at Newark. In asking for transfers, Mr. Kremer referred to the order already made by the commission directing the company to issue transfers to its Bradley Beach patrons from the Belmar to the belt line and vice versa, and to the fact that the order has been stayed by the company's appeal, still pending in the courts.

Allentown-Philadelphia Fare Boost.—The Lehigh Valley Transit Company, Allentown, Pa., and the Philadelphia & Western Railway, Upper Darby, Pa., have filed with the Public Service Commission of Pennsylvania a new joint passenger tariff on one-way and special car fares, applying between stations on the Lehigh Valley Traction Company's line and the Sixty-ninth Street, Philadelphia, terminal of the Philadelphia & Western Railway. The new tariff is to become effective on Nov. 1, and makes an increase of 7 cents in each of the one-way ticket fares between the above-mentioned stations, and similarly makes corresponding increases in the special car rates.

Hearing on Trenton-Princeton Fares.—The Board of Public Utility Commissioners of New Jersey on Nov. 4 heard the application of the New Jersey & Pennsylvania Traction Company, Trenton, N. J., for authority to increase its passenger rate from 6 cents to 7 cents in each of the four zones between Trenton and Princeton. The application was based upon a statement by the company that the 6-cent fare allowed several months ago is not adequate and that the revenue produced by it left an operating deficit of \$1,000 for April, May and June of this year. The company has pending before the commission an application for increased rates for its freight service between Trenton and Princeton. A hearing will be given later on this application.

New Rhode Island Fares Opposed.—The Supreme Court of Rhode Island recently heard argument on the appeal made to it by the town of Lincoln for a stay of the order of the Public Service Commission increasing the fares of the Rhode Island Company, Providence. Clifford Whipple for the Rhode Island Company and John J. Fitzgerald for the railway employees' union argued for a special order from the court to allow the new rates to remain in effect pending the hearing of the appeals of the city of Cranston and the towns of Johnston, Warwick, Lincoln, North Providence and East Providence. At the conclusion of the arguments the court took the matter under consideration. Citation was ordered to issue to the municipalities that entered their appearance before the Public Utilities Commission returnable on Nov. 11, when the matter of fares may come before the court on its merits.

Personal Mention

New Indianapolis Directors

Brief Review of Careers of Three Men Selected to Represent Public on Indianapolis Board

The plan for representation of the public on the board of directors of the Indianapolis Traction & Terminal Company, Indianapolis, Ind., has been carried into effect by the appointment of B. A. Worthington, Edward A. Kahn and Alfred A. Potts as directors. Mr. Worthington was the choice of the Indianapolis Chamber of Commerce, Mr. Kahn was the choice of the Mayor, and Mr. Potts the choice of the Governor. Putting these representatives on the board was the outcome of the recent hearings on fares at which Public Service Commissioner Edwards suggested that public representation be allowed on the board to create confidence in the company on the part of the public. The company quickly fell in with this suggestion.

Mr. Worthington is president of the Cincinnati, Indianapolis & Western Railroad and is looking after the corporate interests of the railroad, which is now under federal control. He became president of the company at the time the railroad was reorganized. Besides being a railroad official of considerable experience, Mr. Worthington has been connected with the organization of electric railways. He lived for fifteen years in San Francisco where he was assistant general manager of the Southern Pacific Company. He was associated with H. E. Huntington during the four years of reorganization of the Market Street Railway, now included in the system of the United Railroads of San Francisco.

Mr. Kahn is one of the prominent business men of Indianapolis and is president of the People's Outfitting Company, vice-president of the National Furniture Company, and director of the Washington Bank & Trust Company. He has never been connected in any way with any public utilities. Mr. Kahn has been at the head of many civic and charitable movements.

Mr. Potts has been identified with utility management in Indianapolis for a number of years. He was born in Richmond, Ind., on Oct. 28, 1856, and was graduated from the law department of the University of Michigan. He has practiced in Indianapolis since 1877. He is now the vice-president of the Citizens' Gas Company, Indianapolis, and was the originator of a substitute for municipal ownership adopted in 1877 by the Consumers' Gas Company which resisted all attacks for fifteen years, until natural gas was exhausted. A similar plan was applied to supply artificial gas through the Citizens' Gas Company in 1905. Under

the arrangement the Citizens' company has a self-perpetuating board of directors, which practically eliminates politics and does away with manipulation. Mr. Potts was one of the organizers of the Commercial Club, now the Chamber of Commerce. He has done some writing and was the author of "A Successful Substitute for Municipal Ownership" which appeared in the *Review of Reviews* a few years ago.

Elmer E. Strong, who has been superintendent of transportation of the New York State Railways, Rochester Lines, for the past five years or more, has resigned to enter the electrical supply business. He has formed a connection with Henry J. Schieffer & Company, district engineering and sales representatives in Central New York



ELMER E. STRONG

for a number of well-known manufacturers. Mr. Strong's headquarters will be at Rochester. Mr. Strong entered the electric railway business immediately after his graduation from Syracuse University with the degree of electrical engineer in June, 1908. His first employer was the Syracuse Rapid Transit Railway, with which he worked in various capacities in the mechanical department until he was appointed chief inspector in October, 1909. Early in 1912 he became superintendent of transportation of the Utica & Mohawk Valley Railway, and a few months later succeeded F. A. Scripture, who had just resigned as superintendent of transportation of the Syracuse Rapid Transit Railway. The following year he succeeded W. C. Callaghan, who had resigned as superintendent of transportation of the New York State Railways, Rochester Lines. Mr. Strong has been very successful in handling men, due to his sympathetic interest in their welfare and to his ability to command respect without undue severity. He has applied his engineering training in transportation problems and has en-

deavored to co-operate with the other departments in keeping the tracks open and the cars moving under all circumstances. He was active in the American Electric Railway Transportation & Traffic Association, having been for some time past the vice-chairman of the committee on fares and transfers. He has had unusual responsibilities for a man of his age and has made a host of friends in Syracuse and Rochester.

Roy R. Hadsoll, assistant superintendent of transportation of the New York State Railways, Rochester Lines, has been promoted to be superintendent, succeeding Elmer E. Strong, resigned.

E. D. Blinn, who has been assistant general superintendent of the Kankakee & Urbana Traction Company, Urbana, Ill., has been named general superintendent of the company, succeeding Thomas W. Shelton, who has resigned to enter other business.

E. A. Hays, auditor of freight and passenger receipts of the Illinois Traction System, with headquarters at Champaign, Ill., has been made auditor of passenger business alone. Mr. Hays has held the position of auditor of receipts for the past eight years.

J. M. Hamken has been appointed car accountant for the Illinois Traction System, with headquarters at Springfield, Ill. Mr. Hamken was formerly with the Chicago, Peoria & St. Louis Railroad. He succeeds J. W. Crook, who resigned to enter other business at Michigan City, Ind.

Benjamin C. Amesbury, division superintendent of the New York State Railways, Rochester Lines, and an employee of the company for twenty-eight years, has been promoted to be assistant superintendent of transportation. Mr. Amesbury began his railway career as a driver of horse cars in Rochester.

Frank Fleming, formerly assistant auditor of receipts for the Illinois Traction System, with headquarters at Champaign, Ill., has been appointed auditor of freight receipts. He has been assistant to E. A. Hays for several years, but with the division of the work into an auditorship of freight and an auditorship of passenger business, Mr. Fleming will have an independent position as auditor of freight receipts.

Thomas D. Milne resigned as trainmaster of the Northwestern Elevated Railroad, Chicago, Ill., on Oct. 15, 1918, to become connected with the Bay State Street Railway, Boston, Mass. Mr. Milne has been in the service of the Northwestern Elevated Railroad for the last eighteen years. He entered the employ of the company as a trainman, and worked as clerk, train clerk, dispatcher, chief dispatcher and trainmaster. A farewell dinner was given in Mr. Milne's honor by his old associates of the Northwestern and South Side Elevated, and a beautiful table silver set was presented to him as a token of their esteem and friendship.

New A. E. R. A. Vice-Presidents

Messrs. Todd and Kealy, Presidents of Important Properties,
Are Both Engineers by Profession

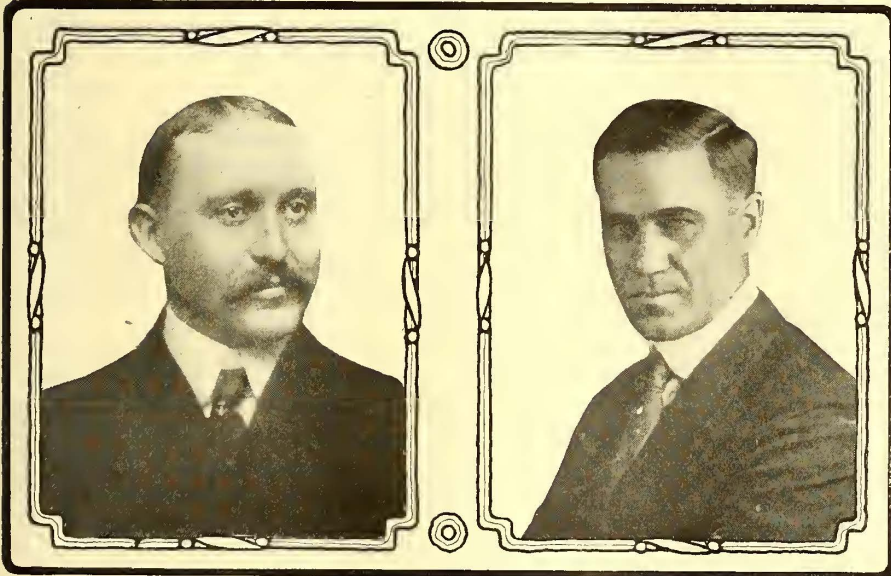
At the meeting held on Oct. 31 the executive committee of the American Electric Railway Association elected to vice-presidencies R. I. Todd, president of the Indianapolis Traction & Terminal Company, and Philip J. Kealy, president of the Kansas City Railways. It is a coincidence that both of these executives entered the electric railway business through the engineering side, Mr. Todd as an electrical, and Mr. Kealy as a civil engineer. Mr. Todd's engineering studies were pursued at the Johns Hopkins University, Baltimore, Md., and Mr. Kealy's at the University of Illinois. Their routes from college halls to presidents' chairs are well worthy of examination.

MR. TODD A PIONEER

At the age of twenty-four Mr. Todd finished college. He was just in time

following year was made general manager of the Rhode Island Company, then a "U. G. I." property.

Mr. Todd's Indianapolis career began in 1906 when he was elected vice-president and general manager of the Indianapolis Traction & Terminal Company, of which he became president five years later. He also served as vice-president and general manager, and is now president of the Terre Haute, Indianapolis & Eastern Traction Company. In these positions he has had problems of a varied character; engineering, labor, public relations. In all he has shown great analytical power, which will be of value to the industry through the American Association executive committee. He is active not only in the electric railway associations, but also keeps in touch with the A. I. E. E. and the A. S. M. E.



ROBERT I. TODD

PHILIP J. KEALY

(1893) to be in early on the electrification of the horse railways, his first job after graduation being with the Eckington & Soldiers' Home and Belt Railways in Washington, D. C. When later these roads were consolidated as the City & Suburban Railway he was made general superintendent and electrical engineer. The Washington period covered about six years. The following seven years, ending with his call to Indianapolis, brought Mr. Todd a diversified and valuable engineering and administrative experience. First he spent a year with the Compressed Air Company, New York City, in experimental work; then for a year he was mechanical engineer of the Consolidated Traction Company; for the next year he was first general manager, then vice-president of the Cincinnati Traction Company. In 1902 he took up mechanical engineering work with the United Gas Improvement Company in Philadelphia and the

His general interest in electric railways is indicated by his election to the presidency of the T. & T. Association in 1909. Mr. Todd carries his many burdens with a smile, and the accompanying photograph, a recent one, might have been taken at any time during the past twenty years.

MR. KEALY ROSE RAPIDLY

Mr. Kealy is a younger man by fifteen years than Mr. Todd. His specialty has been valuation work and the preparation of reports and plans for economical operation of utilities. Immediately after graduation from the university at Urbana he joined the staff of the Board of Supervising Engineers, Chicago Traction, as field engineer. His first work was in surveying crossings in the northern and western section of the city. Between 1907 and 1914, with Bion J. Arnold, he took part in valuation work, including that on the Chicago Consolidated Traction prop-

erty, and he assisted in the preparation of the Chicago Traction report. He also took a prominent part in valuations at Seattle, Buffalo, Toronto, Kansas City and elsewhere.

Mr. Kealy's activities in Kansas City, which led eventually to his present presidency, began in 1912 when he, as assistant to Mr. Arnold, took up a study of the Metropolitan Street Railway. About twenty months later he left Mr. Arnold to become engineering adviser to R. J. Durham, executive head of important utilities, including the Kansas City Railway & Light Company. With L. R. Ash, city engineer of Kansas City, he worked out what is known as the Kealy-Ash plan of settlement of the controversy between the Metropolitan and this city. When the plan was put through he was appointed the company representative on the board of control of the Kansas City Railways which succeeded the Metropolitan Street Railway. Early in 1916, when less than thirty-two years of age, he was elected to the presidency of the company, the position he now holds.

Mr. Kealy has made an enviable position for himself in civic and military affairs as well as in the utility field. He has not only labored unceasingly to promote good feeling toward the local railway, but has also been active in the Missouri National Guard, in which he served as colonel of the Third Regiment. He went with his regiment to the Mexican Border in 1916. This regiment was largely recruited by Mr. Kealy and he used striking means to arouse interest during the recruiting period. He was also at the head of the 138th Infantry at Camp Doniphan last year, but his physical condition did not permit continuance in active service.

Thomas W. Shelton, general superintendent of the Kankakee & Urbana Traction Company, Urbana, Ill., since July 1, 1913, has resigned. He has not decided upon his immediate future. Mr. Shelton has been engaged in electric railway and electric lighting work for thirty years. His first railway connection was with the old Brooklyn Street Railway, Cleveland, Ohio, where he remained ten years. Two years' service followed with the Indianapolis Street Railway, now leased to the Indianapolis Traction & Terminal Company. His next connection was with the Northern Ohio Traction & Light Company, Akron, Ohio, with which he continued from 1900 to 1904. He aided in the construction of the line of the Fort Wayne & Springfield Traction Company between Fort Wayne and Decatur, Ind., and served the company both as mechanical and electrical engineer. In 1908 he went to the Indianapolis, Columbus & Southern Traction Company, Columbus, Ind., as master mechanic. In 1910 he entered the service of the Illinois Traction System under E. D. Bell, general superintendent of the St. Louis business of the company. He next went to the company at Urbana, Ill.

Manufactures and the Markets

DISCUSSIONS OF MARKET AND TRADE CONDITIONS FOR THE MANUFACTURER,

SALESMAN AND PURCHASING AGENT

ROLLING STOCK PURCHASES

BUSINESS ANNOUNCEMENTS

Government's Reconstruction Agency

Passage of Overman Bill Providing for Commission Similar to War Industries Board Likely

By WINGROVE BATHON

Washington representative ELECTRIC RAILWAY JOURNAL

In connection with the possibility of a reconstruction and readjustment agency being created by act of Congress, opinion is crystallizing in Washington along the line that the members of the War Industries Board will most likely be appointed to this work, in case the Overman bill, which is an administration measure, and which provides for a commission of five members to be appointed by the President, is passed by the present Congress. There is every expectation that this bill will be passed, and the likelihood of its passage has been added to by the defeat for re-election of Senator Weeks, who proposed a reconstruction measure, which would have created a reconstruction agency composed of members of Congress.

In Washington it is now believed that if the Overman Bill is passed President Wilson is likely to name as members of the reconstruction commission Bernard M. Baruch, chairman of the War Industries Board, and some of his principal associates. It is pointed out in Washington that while Senator Weeks has been defeated his idea of a legislative reconstruction agency has not necessarily died. In other words, it is expected that during the life of the present Congress Senator Weeks' idea will be pushed. But it is also pointed out in Washington that there is every likelihood that if a congressional reconstruction agency were created, even admitting that the consent of President Wilson to do so could be obtained, the new Congress which takes office on March 4 next would probably legislate out of existence, possibly by failing to appropriate monies, the creation of the present Democratic Congress.

All of the present indications in Washington, however, tend to show that the Overman bill will be passed and that the machinery of the War Industries Board will be turned into after-the-war work behind the commission to be appointed under the Overman bill, under the probable leadership of Mr. Baruch, as chairman of the new commission.

It is pointed out in Washington that the present agencies of the War Industries Board are in possession of complete data and information concerning

the industrial, commercial, financial and transportation resources of the country. For this reason there are many who believe that the War Industries Board is the only agency equipped with machinery and supplied with the necessary information to give suitable guidance to business for after-the-war work.

Because of the prospect of peace, members of the War Industries Board—more particularly committees of that board—are announcing in Washington

their intention of preparing to return home and get ready for the reconstruction period which they must face in their own business. In some respects this attitude, while natural, is greatly to be regretted, according to the best opinion obtainable in Washington, because of the growing belief that the War Industries Board which has done so much to guide business during the war is so well fitted to continue to guide business during the reconstruction period.

Curtailments in Railway Tools

Suggestion Made to War Industrial Board by Manufacturers Eliminates Many Styles and Sizes

Owing to the shortage of iron and steel, a great many varieties of manufactured lines have been curtailed and in many instances eliminated altogether. A very pronounced movement has taken place to standardize as much as possible equipment used by electric railways and this is especially noticeable in all lines of tools. The following suggestions have been made to the War Industries Board by the manufacturers and it is understood have been adopted.

Belt

Cut out 1½, 2¼, 2¾, 3¼, 3¾, 5½ and 6½ leather belt.

Also same sizes in canvas and rubber where so made.

Belting—Rubber and Canvas

Cut out 4½, 7, 9, 11, 13 and 15-in. widths.

Cut out two-ply in sizes larger than 4 in.

Cut out three-ply in sizes larger than 8 in.

Cut out all fractional widths above 8 in.

Belting—Rubber

Cut out 1½, 2¼, 2¾, 3¼, 3¾, 4½, 5½, 6½, 7, 9, 11 and 13 in.

Widths larger than 14 in. should be increased in multiples of 2 in., i. e., 14, 16, 18 in., etc.

Bellows—Blacksmith

Cut out 26, 28, 32, 34 and 38-in. sizes.

Blades—Hack Saw

Cut out 9 and 11-in. lengths and ⅞ and ⅝-in. widths.

*Blocks—Wood Tackle

Cut out 3½, 9, 11 and 13 in.

Brass Sheets

Cut out 11, 13, 15 and other odd gages.

Bolts—Lag

Cut out ⅞, ⅝ and ⅜-in. diameters.

Bolts—Machine, Blank and Carriage

Cut out ⅞ and ⅝-in. diameters.

Cut out 6½ and 7½-in. lengths and odd inches in lengths above 10 in.

Bolts—Railroad Track

Cut out ⅞ and ⅝-in. diameters. Have manufacturers establish standard lengths.

*Bolts—Stove

Cut out ⅝-in. diameter. Also ¼-in. lengths above 3 in.

Cans—Bench Oil

Cut out ½ and ¾-pt. sizes. Make only in ¼, ½ and 1-pt. capacities.

Casing

Make one thread standard for each size. Manufacturers should eliminate many undesirable weights and sizes.

All pipe manufacturers should meet and immediately decide on many sizes and weights which could readily be eliminated, thereby, reducing manufacturing costs and increasing production of desirable sizes of merchant pipe, extra strong, O. D. pipe, casing, line pipe and tubing.

Chisels—Blacksmith Hot and Cold

Cut out ¾-in. widths.

Chucks—Drill

Probably only three or four styles should be made, and they can be standardized.

Cocks—Brass and Iron

It is difficult to make concrete suggestions on this line. The manufacturer could do it better.

Cord—Sash

Cut out ¾ and ⅝-in. diameters.

Cotters—Spring

Cut out 1/64-in. sizes in diameter, and ¼-in. lengths over 2 in. long.

Couplings—Hose

All hose threads should be standardized for the entire United States.

The use of iron-pipe threads on garden and fire-hose couplings would result in a tremendous saving in material and large cost reduction.

Crowbars

Cut out all but 10, 14 and 20-lb. bars.

Cups—Oil and Grease

Make only three or four styles each of brass, glass, iron or steel.

Drills—Blacksmith

Make ⅝-in. shanks only. Discontinue ¼-in. shanks. Make one standard length only.

Drills—Hand and Breast

Make three or four styles only.

Drills—Square Shank Ratchet

Make one size shank only.

Drills—Twist

Make with regular flute only. Manufacturers can readily eliminate 100 or more very undesirable sizes, upon which the production is very limited, and the cost of production more than their manufacturing profit.

Drivers—Screw

Cut out 5, 7 and 9-in. sizes.

Files—(Except Swiss Pattern)

Cut out all odd lengths in flat, round and half round and square files. Also cut out

*Have but a limited use in electric railway field.

5½, 7, 9, 11 and 13 in. taper files. Cut out all odd lengths in wood files and wood rasps.

Fittings—Cast Iron

Cut out 3½, 4½, 7, 9 and 11-in. sizes.

Forges—Blacksmith and Rivet

Should be standardized, many sizes and styles being entirely useless.

Gages—Steam, Vacuum, Gas, Oil,

Hydraulic, etc.

Cut out 2, 4½, 5½ and 6¾-in. dials.

Gages—Standard Water

Make round body only, polished and rough in ½ and ¾-in. sizes only.

Hammers

Made in black finish only.

Hammers—Sledge and Stone

Discontinue 3½, 4½, 7 and 9-lb. sizes.

Hinges

Cut out heavy tee. Also 5 and 7-in. lengths in strap and tee.

Hoists

Cut out differential hoists in capacity larger than 1 ton. Also screw hoists in sizes larger than 2 tons.

Jacks—Common Screw

Cut out 12, 16 and 24-ton capacity.

Jacks—Hydraulic and Ball Bearing

Make 20, 40, 60, 80 and 100-ton sizes only.

Jacks—Trip

Make only in automatic lowering and trip jacks.

Lacing—Rawhide Belt

Cut out ⅝ and ⅞-in. widths.

Lockers—Steel

Cut out 42 in. high x 15 in. wide. Make only 36, 48 and 60-in. heights x 12 and 18-in. widths.

Metals

Cut out all but two grades of solder and three grades of babbitt metal, one lead-base metal, one tin-content metal and one tin-base metal.

Nails

Discontinue manufacturing iron cut nails.

Nails—Wire

Cut out 7, 9 and 12 d.

Nuts

Cut out square, hot-pressed and cold-punched tapped and blank nuts—both in regular and jam.

Nuts

Hexagon hot pressed and cold punched, regular and jam, cut out ⅞, ⅝ and ¾-in. sizes above 1 in.

Nuts

Semi-finished and case-hardened, regular and jam, cut out ⅞ and ⅝-in. sizes. Also ¾-in. sizes above one in.

Picks—Clay and Mattocks

Make adze eye only. Cut out 5 to 6-lb. and 8 to 9-lb. clay.

Suggest straight weights only, i. e., 6, 7, 8 and 9 lb.

Believe straight weights only are now about to be adopted by pick manufacturers.

Pipe—Wrought Black and Galvanized

—Steel and Iron

Cut out 3½, 4½, 7, 9 and 11-in. diameters.

Pipe—Wrought Extra Strong

Cut out ½, 3½, 4½, 5 and 7-in. diameters.

Pipe—Wrought Double Extra Strong

Cut out 3½, 4½, 5 and 7-in. diameters.

Pipe—O. D.

Cut out 15, 17, 21 and 22-in. diameters.

Cut out ⅜ and ⅞-in. thicknesses in diameters 14 to 20 inclusive.

Cut out ⅞-in. thickness in sizes 24 to 30-in. diameters.

*Pipe—Lead

Have three weights only—light, strong and extra strong.

Pliers

Discontinue all fractional lengths.

Pots—Solder

Cut out 4½ and 13½ in.

Presses—Drill

For ordinary shop use should be made in only four sizes for hand and power. This applies to drills only for small shops.

Pulleys—Steel

Starting at 11-in. diameter cut out odd inch diameters.

Starting at 42-in. diameter step up 6 in. each step and cut out sizes in between.

Pulleys—Wood

Cut out 11, 13, 15, 17 and 19-in. diameters, and starting at 42-in. diameter step up 6 in. each step and cut out sizes in between.

Rivets

Cut out all 1/64 and 3/32-in. diameters and all ⅜ and 1/2-in. lengths.

Make only oval, flat, countersunk and cone head.

*Rope—Manila

Cut out ⅞, 1, 1¼, 1½ and 1¾-in. diameters.

Saws—Hand

Many "points" can be discontinued.

*Scales

Should be standardized. Entirely too many sizes and styles on the market.

Screws

Drop forge and malleable thumb.

Make only one style of head with and without shoulder. Also cut out all sixteenth diameters and ¼-in. lengths above 2 in.

Nuts, drop forge and malleable thumb, make only one style head and cut out same diameters as in thumb screws.

Screws—Hexagon Head Cap

Cut out ⅞ and 1½-in. diameters and ¼-in. lengths above 2 in.

Screws—Button Head Cap

Cut out entirely.

Screws—Lag

Cut out ⅞, ⅞, ⅞ and 1½-in. sizes. Discontinue cone point lag screws.

Screws—Machine

All styles of head, iron and brass, cut out ⅞-in. lengths. Also cut out ¾-in. lengths over 1 in. long and ¼-in. lengths over 2 in. long.

Have one thread only for each size. Where sizes run same as cap and set screws threads should all be the same. The standardization of same threads would result in tremendous reduction in stocks to be carried. Standardization would also affect the whole line of taps and dies.

(We understand that the Bureau of Standards has this matter in hand at the present time.)

Screws—Square Head Set

Make only 2 points, cup and dog, and only standard head. Also make only U. S. S. thread, even if asked to make "V" thread.

Also cut out ⅞ and 1½-in. diameters and ¼-in. lengths above 2 in. long.

Screws—Wood

Cut out all odd numbers in diameter about No. 10 and two or three of the smaller and larger diameter numbers in each length.

Also cut out 2½ and 2¾-in. lengths.

Shovels

Cut out No. 4 and No. 5 dirt, No. 4 and No. 5 coal, and Nos. 2, 3, 8 and 9 scoops.

Spikes

Eliminate ⅞ x 2, 3 and 3½ in. x 4 and 4½ in. ⅞ in. (all sizes). ½ x 5 in. ⅞ x 4½ and 6 in. 5 x 5½ in.

Shafting—Cold Rolled Steel

Make only 1⅞, 1½, 2⅞, 2½, 3⅞ and 3½ in.

Steel—Sheet

Cut out 27 and 30-in. gages. Also cut out many odd and undesirable widths.

Stocks and Dies—Bolt

Make an effort to standardize threads.

Tongs—Blacksmith

Standard lengths should be only 14, 18, 24, 30 and 36 in.

*Transmission

Cut out 1½, 2⅞, 2½ and 3⅞-in. diameters in hangers. Also make the drop hanger frames vary 4-in. centers up to 24-in. lengths and 6-in. centers above. In other words, have the hangers 10, 14, 18-in. centers, etc.

Also cut out corresponding sizes in couplings and collars.

Turnbuckles and Sleeve Nuts

Cut out ⅞ and ⅞-in. diameters and ¼-in. sizes above 1 in.

Valves—Brass and Iron Body

Cut out 3½, 4½, 7, 9 and 11-in. sizes. Brass valves should be made only in standard weights for 125-lb. pressure, and extra heavy for 250-lb. pressure.

Manufacturers should get together and eliminate many special sizes and styles of iron body globe, angle and also stationary and rising steam iron body gate valves.

Vises—Machinists

Cut out ¾-in. widths. Also cut out vises with stationary jaw and swivel base and vises with swivel jaws and stationary base.

Wrenches—Drop Forged

Cut out unfinished.

Washers—Axle

Should be standardized.

Washers—Lock

Make light and heavy pattern only for each standard size of bolts.

Washers—Wrought

Cut out ⅞ and ⅞-in. sizes and ¾-in. sizes above 1 in.

Wire

Cut out all odd gages on annealed fence wire, brass and copper wire, phosphor bronze, etc.

New Priorities Supplement

Rating of A-5 Given to Government Orders—Repairs Rate Higher Than New Production

There has just been issued by the War Industries Board, Priorities Division, Supplement No. 2 to Circular No. 4 which makes certain changes in sections of 5, 7, 8, 9 and 23 of Circular No. 4 and supplement No. 1 thereto. Those parts which are of most interest to the electric railway field deal with automatic ratings on government orders and for repairs.

Orders placed by authorized officers of the War or Navy Departments, Emergency Fleet Corporation, Bureau of Industrial Housing and Transportation of the Department of Labor, or by the Housing Corporation and which fall within class A are now automatically classified as A-5 provided the orders carry an indorsement personally signed by the officer.

In the matter of repairs the supplement states that it is in the public interest that existing facilities should be operated without interruption and also that existing equipment should be repaired rather than new equipment constructed, each order for the repair of, and each order for materials, equipment or supplies for necessary repairs to, a product for the manufacture or production of which an automatic rating is provided in Section 8 of the supplement and all amendments thereto, shall be entitled to an automatic priority rating one point higher than is provided for the manufacture or production of the product itself.

Ball Bearing Priorities

Manufacturers of ball bearings and roller bearings whose plans are or in the future shall be exclusively devoted to manufacturing products being or to be absorbed directly or indirectly by the government or in other uses of essential importance may receive a Class B-3 rating for steel and iron requirements. However, manufacturers of ball or roller bearings or parts thereof must pledge themselves to use only such steel suitable therefor which is now in their possession or which they have hereafter coming to their possession and to sell no ball bearings or roller bearings except for essential purposes, or under permits in writing signed by or under authority of such Priorities Division.

Recent Incorporations

Springfield & Southern Illinois Traction Company, Indianapolis, Ind.—Articles of incorporation have been filed by the Springfield & Southern Illinois Traction Company with the Secretary of State of Indiana for the construction of a line from Springfield to Hillsboro, Greenville, Pinckneyville, Cartersville and terminating at Metropolis, on the Ohio River. A branch is proposed from Pinckneyville to Belleville and another from Springfield to Rock Island. A survey for the road, which will be about 400 miles long, has been completed. The offices and principal place of business of the company are to be in the American Central Life Insurance Building, Indianapolis, Ind. Incorporators: Henry R. Campbell and John J. Baldus, Indianapolis, and John A. Conkey, Richmond, Ind.

Franchises

Los Angeles, Cal.—The City Railway of Los Angeles, controlled by the Los Angeles Railway Corporation, has been granted a franchise by the City Council for the construction of an extension from a connection with the West Tenth Street line, along Victoria Avenue and the Country Club Drive to a point near Rimpau Boulevard.

Norfolk, Va.—The Virginia Railway & Power Company has been granted a franchise by the City Council of Norfolk, authorizing a contract between the city and the company looking toward the improvement of transportation facilities between the city and the various government activities in the vicinity. The ordinance authorizes the widening of track in parts of the present system and the construction of new track on certain streets.

Track and Roadway

Montgomery Light & Traction Company, Montgomery, Ala.—It is reported that plans are being made by the new owners of the Montgomery Light & Traction Company for general improvements to the railway and power and light plants. It is expected that about \$250,000 will be expended for these improvements.

Connecticut Company, New Haven, Conn.—Material has been received and work will be begun soon by the Connecticut Company on the North Bridgeport extension.

Chicago (Ill.) Surface Lines.—The Chicago Surface Lines is completing three track-extension jobs, totaling 5½ single-track miles for the purpose of better service to government industries. The track is being built by the railway at the request of the government, and the construction is being temporarily financed by the government.

Terre Haute, Indianapolis & Eastern Traction Company, Indianapolis, Ind.—The Public Service Commission of Indiana has dismissed the petition of the Marion County Commissioners to compel the Terre Haute, Indianapolis & Eastern Traction Company to relay its tracks in the National Road from Cumberland to the Marion-Hancock county line. Ele Stansburg, attorney general of Indiana, has advised the commission that the matter is not within its jurisdiction. The county commissioners wish the traction company to remove its tracks from the southern edge of the highway to the center of the road.

Inter Urban Railway, Des Moines, Iowa.—The government has authorized the Inter Urban Railway to electrify the tracks within the cantonment at Camp Dodge. Up to this time, while the Inter Urban Railway has handled all the freight and passenger business to and from the camp, the tracks within the cantonment have been used exclusively for steam cars. The cost of electrifying the tracks will be about \$30,000.

New Orleans, La.—It is reported that a conference will be held at Bay St. Louis, Miss., in January to arrange preliminary plans for the construction of a municipally-owned electric interurban railway between New Orleans and Mobile, in accordance with the provisions of acts passed several months ago by the Mississippi and Louisiana legislatures empowering municipalities to co-operate for the construction, ownership and operation of interurban lines. The municipalities are also authorized to establish hydroelectric plants to generate electric current and the conference may take steps to secure desirable locations for them so as to furnish power for the interurban line

as well as for lighting the cities and towns along the Mississippi coast. [Jan. 5, '18.]

Boston (Mass.) Elevated Railway.—A contract has been awarded by the Boston Elevated Railway to B. E. Grant, Boston, for resurfacing, rebuilding, repairing and repaving tracks on Atlantic Avenue, between Summer and Broad Streets.

Trenton & Mercer County Traction Corporation, Trenton, N. J.—Work has been begun by the Trenton & Mercer County Traction Corporation on the installation of new conduits in Lincoln Avenue, this being one of the steps in the elimination of electrolysis damage in Trenton.

Lake Shore Electric Railway, Cleveland, Ohio.—Operation has been begun by the Lake Shore Electric Railway over its new cut-off between Huron and Rye Beach. This lessens the traveling distance between Cleveland and Toledo a half mile.

Eastern Pennsylvania Railways, Pottsville, Pa.—The Public Service Commission has granted the Eastern Pennsylvania Railways permission to issue \$136,500 in bonds to extend and improve its system.

Texas Electric Railway, Dallas, Tex.—The Texas Electric Railway has bought land at McKinney and will enlarge the trackage for express traffic.

Houston (Tex.) Electric Company.—The North Main Street tunnel of the Southern Pacific Company at Houston, Tex., used jointly by that company, the Houston Electric Company and the city, was recently destroyed by fire.

Tacoma (Wash.) Municipal Railway.—Work has been begun on the double-tracking of the Tacoma Municipal Railway across the tideflats.

Power Houses, Shops and Buildings

Shore Line Electric Railway, Norwich, Conn.—The taxpayers of Groton have authorized the Board of Water & Light Commissioners to enter into a contract with the Shore Line Electric Railway for electricity to operate the municipal electric light system. Energy will be secured from the Montville power plant of the Eastern Connecticut Company. The cost of installing the new system, including transformers, wiring, insulation, etc., is estimated at \$20,000.

Boston (Mass.) Elevated Railway.—A contract has been awarded by the Boston Elevated Railway to the Bernitz Method Company, Boston, Mass., for the construction of all forced-draft furnaces in the power plants of the road to increase the efficiency of fuel utilization. Thirty-eight boilers will be operated with the Bernitz system of clinker prevention.

Mahoning & Shenango Railway & Light Company, Youngstown, Ohio.—Plans formulated by Peter Witt for Youngstown, Ohio, call for the erection of a large waiting and comfort station and the rerouting of all lines of the Mahoning & Shenango Railway & Light Company entering the public square. The comfort and waiting station will be approximately 100 ft. long and will be erected in the center of the street. It will be constructed of brick and be modern in every respect. The comfort station will be underneath the waiting station. Work on changing the tracks and building the station will not be begun before next spring. Plans have been worked out for the erection of a temporary shelter on both sides of the square this winter, to be constructed of sheet metal.

Philadelphia (Pa.) Rapid Transit Company.—Plans have been prepared by the Philadelphia Rapid Transit Company for the installation of two new electrically operated cranes and for other alterations and improvements in its repair shop at Frankford Avenue and Bridge Street. The cost of the entire work is estimated at \$45,000.

Chicago, Milwaukee & St. Paul Railway, Seattle, Wash.—The Board of King County Commissioners at Seattle, Wash., has granted to the Chicago, Milwaukee & St. Paul Railway a franchise to construct transmission lines for electrical power from Snoqualmie Falls to Cedar Falls, and from Snoqualmie Falls to Renton Junction, via Preston, Issaquah and Renton for a period of thirty-eight years. Power lines will carry 100,000 volts, and will be used in electrification of the company's lines from the Cascade Summit to its coast terminals.

Puget Sound Traction, Light & Power Company, Seattle, Wash.—The Jefferson Street substation of the Puget Sound Traction, Light & Power Company was recently destroyed by fire. The loss is estimated at \$75,000.

Rolling Stock

The Washington-Virginia Railway, Washington, D. C., as mentioned in a recent issue of the ELECTRIC RAILWAY JOURNAL, expected delivery on Nov. 1 of twenty motor and twenty trail cars from the J. G. Brill Company. The specifications for the motor cars follow:

Number of cars ordered.....	20
Name of road. Washington-Virginia Railway	
Date order was placed.....	June 21
Date of delivery.....	Nov. 1
Builder of car body.....	J. G. Brill Co.
Type of car.....	Interurban passenger
Seating capacity.....	52
Weight, total.....	50,000 lb.
Length over all.....	48 ft. 0 in.
Truck wheelbase.....	6 ft. 0 in.
Width over all.....	3 ft. 2½ in.
Height, rail to trolley base.....	12 ft. 1½ in.
Body.....	Semi-steel
Interior trim.....	Cherry
Headlining.....	Agasote
Roof.....	Arch
Air brakes.....	Westinghouse A. M. M.
Axles.....	A.E.R.A. E-B
Bumpers.....	Brill
Car signal system. Electric Service Supplies	
Car trimmings.....	Edwards
Control.....	Westinghouse, H. L.
Couplers.....	Tomlinson
Curtain fixtures.....	Curtain Supply Co.
Curtain material.....	Pantasote
Designation signs.....	Electric Service Supplies
Door operating mechanism.....	National Pneumatic
Gears and pinions.....	Nuttall
Hand brakes.....	National Staffless
Heater equipment.....	Peter Smith electric
Headlights.....	Electric Service Supplies
Journal bearings.....	M. C. B.
Journal boxes.....	M. C. B.
Lightning arresters.....	Westinghouse, Type K
Motor, type and number....	4 West 306 CV.

inside hung
Paint, varnish or enamel..... Brill
Registers..... Ohmer
Sanders..... Ohio Brass Co.
Sash fixtures..... Edwards
Seats..... Winner
Seating material..... Rattan
Slack adjuster..... Westinghouse
Springs..... Brill
Step treads..... Feralun
Trolley catchers or retrievers... Ohio Brass
Trolley base..... Nuttall No. 14
Trolley wheels..... Nuttall
Trucks..... Brill, M. C. B. 2x
Ventilators..... Railway Utility
Wheels (type and size)... 33 in. chilled iron

Trade Notes

Moller & Schumann Company, varnish manufacturer, has changed the name of its organization to Hilo Varnish Corporation.

Railway Improvement Company, New York, N. Y., announces that the Rhode Island Company has accepted the fifty Rico coating recorders which have been on test on its Woonsocket line for the past year.

National Electric & Welding Company, 90 West Street, New York, has been appointed New York sales agent for the C. & C. Electric & Manufacturing Company and has also been appointed Eastern sales agent for the Wesche Electric Company of Cincinnati. The personnel formerly connected with the New York sales office of the C. & C. Electric & Manufacturing Company is now handling both C. & C. and Nesche machinery, the lines of apparatus having been extended to include alternating-current and direct-current equipment, arc welders, etc.

New Advertising Literature

Crescent Belt Fastener Company, New York, N. Y.: "Gone Again," twenty-four-page pamphlet, in a humorous vein, descriptive of belt fastening.

Ohmer Fare Register Company, Dayton, Ohio.: Four-page semi-monthly, the Ohmer Fare Register, Vol. 1, No. 1, for circulation among its employees, many of whom are now in the service at home and abroad. This initial issue contains a portrait and message from John F. Ohmer, president of the company.